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IT is nearly twenty years since the project for building an arcade railroad under Broadway began to be discussed in New York; and sixteen years ago, at least, the plan was so far matured that sectional drawings were generally circulated, showing the cellars of the great retail stores which line the street converted into salesrooms, and thronged with customers out of the crowd which occupied the subterranean sidewalks, while trains of cars passed and repassed between. The scheme was an attractive one to the New Yorkers of those days, but circumstances interfered with carrying it out, and the elevated railroads came, and for a time appeared to satisfy the desire of the citizens for rapid transportation. A year or two ago, however, the project, which had never lost all its vitality, was revived, and an effort was made to secure a charter for a company to carry out the original plan. Fortunately, perhaps, for all concerned, the attempt failed, and it was not until the privileges of the company were restricted to the occupation of the bed of the street from curb to curb, instead of from building-line to building-line, that its application was so far favorably received that it is likely to be granted. With this modification, there seems to be little or nothing objectionable about the plan, and the convenience and comfort of myriads of people will be greatly promoted, without injuring any one. It is disgraceful, but true, that the columns of some of the New York daily papers are so freely used in the interest of speculators that very little credit is to be given to the statements of facts which they make, and still less to the opinions which they express, about such matters; but, although the promoters of the arcade road have been abundantly maligned in some of the public prints, no objections have been urged against the present scheme itself, so far as we have seen, which merited serious consideration. About thirty property-owners on Broadway have, it seems, so far appropriated rights which belonged to the public as to extend the basements of their buildings beyond the curb, under the pavement of the street, and these will have their underground room somewhat curtailed, but vaults extending only to the curb will not be interfered with, and it is needless to say that such pipes or sewers as may come in the way can be easily disposed of. Costly as the undertaking will be, there can be no doubt that the capital invested in it will earn a handsome return. Nearly everything in New York centres in Broadway, through which lies what seems to most people the shortest route from every part of the city to every other; and either subterranean or aerial transit is likely, so far as it can, to prefer the same line. Hitherto, the very immensity of the traffic through the street has prevented even the consideration of plans for giving the traffic better channels, through the fear that it would be temporarily impeded; but if the engineers of the arcade road fulfil their promises, they will be able, without interfering appreciably with the present use of the street, to complete in four years an entirely new street below the old one, fitted with the necessary appliances for transporting a far greater number of passengers and bulk of freight than has ever yet passed over the surface street within a given time.

A CASE of considerable importance to builders has been brought before the Supreme Court of Massachusetts by Amaziah Mayo, Jr., of Springfield, who seeks the aid of the law in compelling the County Commissioners, who have awarded a contract for building a jail for the county to Messrs. Creesy & Noyes of Boston, to reverse their action, and give the contract to him, on the ground that he was the lowest bidder for the work, and is entitled to it. The plaintiff's petition is signed by eighteen or twenty other persons, who claim an interest in the case, as taxpayers, robbed of their just right to have their jail built by the lowest bidder, and the petitioners aver "that said Committee," this meaning, we suppose, the County Commissioners, "were bound to award said contract to the lowest responsible bidder, or reject all proposals and advertise for new." The petitioners further aver that Mr. Mayo is a responsible party, and claim that the Commissioners "had no right in law or equity to award said contract to any other" person. It is impossible, without knowing the words of the invitation to contractors to submit bids, to say just what rights the parties would probably be held by the court to have in the premises, but if, as is likely, a simple invitation was issued, without any promise to award the contract to the lowest bidder, it is probable that the Massachusetts court will hold, as so many others have before it, that, in the absence of any express statute limiting the discretion of the Commissioners in such matters, the latter were at liberty to select the contractor for the building according to their best judgment, in consideration of all the circumstances, of which the relative amount of the bids for the work is only one. This doctrine, as we know, is violently opposed by many builders, who claim that a comparison of the bids should be the only guide in awarding contracts, but common-sense, in our opinion, is decidedly against this claim, and the law, as has been well said, is only concentrated common-sense.

THE *Scientific American* gives an account of a new application of a form of lighting which is fast becoming common on the other side of the ocean. By this method, which is in use in a manufactory at Essen in Prussia, water-gas, free from admixture with hydro-carbons, is carried through the same pipes and burners originally put in for ordinary illuminating gas, but over each burner is suspended a "comb" composed of thin bars of calcined magnesia, somewhat smaller than the graphite bar in a lead-pencil, set in a small frame. The flame of the gas plays upon one of the magnesia bars, and heats it to intense whiteness, giving a steady, clear light, similar to that derived from the carbon filament in electric lighting by incandescence. This is by no means the first instance in which magnesia has been used for the same purpose, and in much the same way, but in all the earlier systems, so far as we know, the magnesia has been employed in larger masses, and in order to raise it to the proper temperature it has been necessary to intensify the heat of the gas flame by heating the current of gas before its arrival at the burner, either by causing it to circulate through passages formed in a small block of fire-clay exposed to the flame, or in some other way. When so treated, ordinary gas, or rather, gas mixed with atmospheric air, gives an intensely hot flame, and a piece of magnesia or other refractory substance can easily be brought to high incandescence in it; but the burners necessary for the purpose are complicated and expensive, and a cheap device for using the simple ordinary burners in the same way is likely to be very useful. In the Essen factory it is thought that pure water-gas, unmixed with hydro-carbon, is alone suitable for igniting the magnesia comb, but it is not very evident why ordinary gas, mixed with air in such a way as to secure perfect combustion, should not answer the same purpose. The magnesia bars are made by mixing finely-ground magnesia with gum-water or some similar material, moulding the little rods, and baking them at a high heat in a crucible. The comb is shifted over the flame, as the rods crumble away. Each comb contains rods enough to last from eighty to one hundred hours, and costs five cents, and with water-gas at something less than seven cents a thousand cubic feet, which is said to be the

cost of the water-gas at the Essen establishment, the total expense of the light is very small.

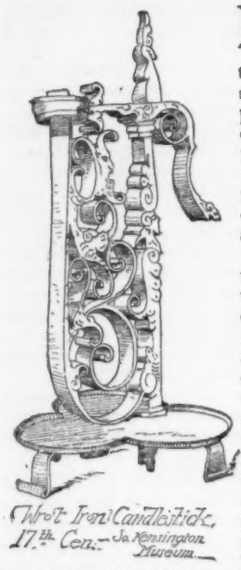
THE editor of the *Builder*, in an article about the architectural portion of the exhibits at the Paris *Salon*, introduces his subject by some suggestive remarks upon architectural exhibitions in general. As he truly says, the *Salon* rooms devoted to architecture are always deserted, except by a few stragglers, while the neighboring rooms, filled with pictures and sculpture, are crowded day after day by eager amateurs, many of whom take long journeys every year for the sole purpose of seeing the objects collected there; and yet architects claim that the art which they profess is the greatest of all, notwithstanding the indifference with which its representations are regarded by the public. In the opinion of the editor of the *Builder*, the architects are right in their estimate of the dignity of their own art, and one cause, at least, of the neglect with which it is treated by others lies in the depraved taste of the "loungers," who prefer to look at the pictures "whose superficial and sensational merit fills them with idle admiration." With all possible respect for the judgment of this admirable writer on all artistic subjects, we cannot quite subscribe to his conclusions. It has often been observed that when any art comes to depend for appreciation upon the trained taste of a select few, that art has entered upon its decline; and however we may despise the "loungers" in the next room, and the "superficial admiration" which they bestow upon other works than our own, we cannot afford to overlook the evidence which this fact gives that our own art, or, at least, the way in which we practise it, appeals very feebly to the imagination or intelligence of our fellow citizens; which is equivalent to saying that the art of architecture, notwithstanding the merit of its professors, is at present, as compared with sculpture or painting, in a state of very limited vitality.

SO far as exhibitions are concerned, the architects, as compared with their rival artists, are, at present, under a special and serious disadvantage, by reason of the bald and disagreeable style in which it is the fashion for them to display their works. To the world in general a building is a building, and is best shown by representations which give as nearly as possible the exact look of the structure, but in architectural exhibitions, particularly in France, buildings, as such, are ignored, and in their place we have geometrical drawings, which are almost always necessarily false and distorted in effect, so technical as to be untranslatable except by experts, and rendered with a gloomy and muddy compound of Indian ink and burnt sienna washes which places them at a great disadvantage in comparison with the pictures in the rooms near by, radiant with the charm of full and beautiful color. Aside from this, however, it cannot be denied that modern architecture, even if shown by photographs or pen-and-ink sketches, which are far more generally liked than washed drawings, is not interesting to persons outside the profession. Whether they ought to care for it or not, the fact remains that they do not, and until they do, it will be difficult to prevent those who practise sculpture and painting from treating our pretensions to rivalry with them in a way which we do not like. It is of no use to plead that the art of architecture deals with forms so conventionalized as to require the highest effort of the imagination to grasp and keep in the conventionalization the sentiment intended to be enforced, to the exclusion of all others. True as that is, it does not follow that because our art demands great mental power, a similar power is requisite for appreciating its works. On the contrary, the highest quality which any work of art can display, aside from the idea which it is intended to express, is a simplicity and force in conveying that idea which makes it impossible for any one to mistake or escape it; and as all the forms by which the architectural art can convey impressions are already familiar to every one, we have, as it seems to us, little reason to complain of anybody except ourselves if our attempts to use those forms as elements of artistic effect meet with a doubtful response. One of these days, when the master shall appear among us who can compose in wall-surface and shadow, in outline, and sculptured decoration and enrichments of color, with some such inspiration as that which enabled Handel to combine a few familiar elements into music which lifts our souls to heaven, we shall find that the public can appreciate this sort of architecture as well as we, and, wondering that nobody ever thought of doing that before, we shall set ourselves to follow in the new road, which will lead us, we may venture to hope, toward the next great epoch of architectural art.

LA SEMAINE DES CONSTRUCTEURS gives a table compiled by M. Barré, of the length of telegraph lines in all the countries of the world. At the end of the year 1884 there were, according to this table, five hundred and fifty-four thousand miles of telegraph lines in operation in all parts of the earth, employing about a million and a half miles of copper wire. About five-sixths of the lines are terrestrial, and the land lines employ, on an average, twice as many wires for the same distance as the cable lines, so that about eleven-twelfths of the telegraph communication of the world goes on over dry land. Naturally enough, the United States possesses a greater length of telegraph lines than any other country, the total being nearly one hundred and thirty-nine thousand miles, each line averaging three wires. Russia comes next, with only sixty thousand miles of line, and twice that length of wire; and France and its colonies follow close after. Great Britain, with its colonies, would probably rival Russia in length of lines, but the statistics for Canada are not given in the table. Switzerland, in proportion to its size, is remarkably well furnished with telegraphs, having four thousand miles of lines, averaging four wires each. Curiously enough, both these figures apply almost exactly to the telegraph system of New Zealand, which most of us have probably supposed to be practically a savage country. Belgium has about the same length of lines as Switzerland, but nearly twice as many wires; and Italy is enterprising enough to have established sixteen thousand miles of line, with nearly fifty thousand miles of wire.

MOST of our readers have probably heard of the baby-brooder, to translate the French name of an apparatus imitated from the incubator so commonly used for hatching eggs; but every one may not know that the infant-incubator, so far from being a scientific toy, is now coming rapidly into use in the French maternity hospitals, and is even regularly made by the manufacturers of medical and surgical appliances, and sold to customers in all parts of France. According to Dr. Hector George, who gives in *Le Génie Civil* an account of the more recent experiments made with the apparatus, the original example, which was first exhibited with the chicken-hatcher at the agricultural fair in Paris in 1880, has been in use since that time at the Maternity Hospital in Paris, with singularly good results. The construction is very simple, the whole affair consisting simply of a double box, placed on a stand. Two panes of glass form the top of the upper box, in which is placed the baby, in its cradle; and in the lower box is placed a vessel of hot water. There are openings between the upper and lower box, and also in the bottom of the lower box and the top of the upper one. Air from the room enters by the lower opening, and is warmed by contact with the hot-water reservoir, and rises to the upper box, from which it escapes through the openings in the top. The child is thus constantly bathed in a warm, fresh, moist atmosphere, which is kept at a temperature of eighty-six to ninety degrees Fahrenheit, as shown by a thermometer hung in the upper box, by adding hot water to that in the reservoir. Every two hours the child is taken out to be nursed and changed, and is then replaced in its box. The influence of the still, moist, warm atmosphere on feeble infants seems to be very favorable, and the apparatus is devoted, in the hospitals, to encouraging the development of puny or prematurely-born children. The average weight of healthy children, born at the usual time, is said to be nine-and-one-half pounds. Those that weigh less than five pounds at birth are classed by themselves as feeble, and unlikely to live, the mortality in this class in maternity hospitals being generally sixty-five or sixty-six per cent. With the help of the baby-incubator this percentage appears to be reversed, sixty-two out of ninety-three prematurely-born children brought up in it having passed the critical period in safety. The disease known as the œdema of the newly-born, which usually carries off four-fifths of those afflicted with it, is also treated in the incubator with singular success, twenty-one out of twenty-five infant patients kept in this warm atmosphere having passed through the disease safely.

ARCHITECTURAL TERRA-COTTA. — I.



BROADLY speaking, the term terra-cotta can be applied to all forms of baked clay, whether it be used for the manufacture of domestic utensils, such as jugs, crocks, etc., or for sewer-pipes, or other forms for which burned clay is utilized; drain tiles and pipes are, perhaps, as potent agents of civilization as the most beautiful productions of the potter's art; but the object of the present article, however, is to treat of the architectural employments of terra-cotta.

The use of this material for architectural purposes dates prior to the times to which our histories reach. In the mythical history of Greek art, we find that Debutades, Rhœcus, Theodos, and others, are mentioned as masters in works of clay. Homer also refers to them, and if we accept the evidence of Dr. Schliemann, the terra-cotta ornaments found upon the hill of Hissarlik must have formed some part of the pottery collection of King Priam. The Assyrians used terra-cotta cylinders or tablets for all the purposes for which the Egyptians employed papyrus, and for which we now use paper, cards and books. These tablets are inscribed with the records of events; bulletins recording the King's victories and the annals of his reign were published on terra-cotta cylinders having the appearance of a rolling-pin, and these were usually hollow, or hollow hexagonal prisms. The inscriptions were placed in different forms, those on the cylinders being engraved lengthwise, while in the prisms they are in compartments on each face. Both forms were made of a very fine material, sometimes unpolished or unglazed, and at other times covered with a vitreous silicious glaze, or white coating. Title-deeds, evidencing the sales of land, were inscribed on rectangular pieces of polished terra-cotta slightly convex on each side, and, as fraud was just as common in those days as now, a cylinder was run around the edges, or across the deed, in order to prevent any enlargement of the document; this cylinder left its impression in relief: if names of witnesses were affixed, each one impressed his oval seal on the wet terra-cotta, which was then carefully baked in the kiln. Records of the sales of Phœnician slaves were also made upon these tablets, the name of the slave being inscribed in Phœnician on the edge. In the palace of Sennacherib at Kouyunjik, there were found collections of almanacs, deeds, histories and spelling-books. It is doubtful with what nation the art of modelling figures in clay originated; the Corinthians have been awarded precedence, although both the Greeks and Romans claim prior title to the invention; but as most of the figures have been destroyed by the barbaric races, their origin cannot be easily followed, and their history will probably long remain more or less hypothetical. The life-size terra-cotta figure of Mercury in the Museum of the Vatican and also some of the large terra-cotta statues in the Museum of Naples, are probably Grecian. The famous torso in the British Museum is also a fine specimen of early modelling in terra-cotta. The ancient statues with which the Roman temples were adorned were made of terra-cotta, but the general opinion is that many of them were purchased from the Greeks and Etruscans.

The employment of terra-cotta in architectural decoration is the most interesting branch of Roman ceramic art, and "until Rome became possessed of the quarries of Luna, marble was excessively scarce, and terra-cotta was employed for the antefixæ or bas-reliefs which formed the interior decoration of a house, the metopes and historic friezes."

In the present article we have not the space nor is there any need that we should enlarge upon the merits of plastic sculpture. "The unrivalled collection of the Louvre shows more eloquently than any description to what perfection this branch of the art had attained, both among the Greeks trading with Rome and among the Hellenes settled in Italy. We learn by a letter from Cicero to Atticus that a number of these bas-reliefs came from Athens, and the great orator asks his friend to procure models with which he desires to decorate his atrium. Therefore, though the greater number of the works classed in the Louvre came from Tusculum, or Roma Vecchia, localities of the Campagna di Roma, magnificent villas, we do not seek to distinguish those evidently Greek from their imitations."

The Greeks undoubtedly made the greatest development in modelling in statues and bas-reliefs; but they probably relinquished the production of large works in terra-cotta when they acquired the arts of working in marble and bronze. After the fall of the Roman Empire, and in sympathy with the decline of all other arts, terra-cotta manufacture for artistic employments rapidly degenerated; but in Italy, during the fifteenth and sixteenth centuries, the capabilities of terra-cotta were more fully appreciated than at any time before or since that period, and exquisite examples are offered in the enamelled bas-reliefs by Luca della Robbia, and the details of many churches in northern Italy. The modern employments of terra-cotta promise, however, to exceed even those of former ages, and its revived use is in accordance with the progress of the times, which demands honest construction and artistic decoration in lieu of the sham and immature productions of the period just past. With the accumulation of wealth and consequent leisure, the love of building, which man shares with the ant and the beaver, has developed into a love of proportion, of harmony, and of beauty. The fierce conflagrations, with their attendant trains of misery and loss, to which some of the great cities of this country have been subjected, still excite horror at the past calamities and apprehension for future ones, and indelibly impress upon us the absolute demand for the employment of fire-resisting substances in architectural construction. Terra-cotta has proved itself, through many centuries of use, to be absolutely fire-proof, and there is not the slightest room for doubt but that we are now on the threshold of an era in which this material will be employed in untold manners and forms. Shoddy textures and materials are now vanishing with the immaturity with which they were generated, and the time of the cheap and the unstable in constructive material, as well as in constructive decoration, is rapidly vanishing before the present spirit of progress.

The quarter of a century just past has witnessed many changes in our country; America's development in mechanics and the arts has been phenomenal; but with all her progress, there is no branch to which we can look with more satisfaction than to the evidences of art which many of the public and private buildings in our large cities present. Among the first buildings in which terra-cotta was used in this country were the Cooper Institute Building, in New York City, and the State-House in Springfield, Illinois, no further effort being made to bring it into use, until it was resorted to for ornamentation in the construction of the Museum of Fine Arts in Boston, and then it was imported from England. The material has been employed, for the first time in the United States, both for the building material and for all decorative details, in the recently-erected building for the Long Island Historical Society in Brooklyn, and with the most satisfactory results. The new Metropolitan Opera-House in New York City presents some very beautiful samples of terra-cotta work, the panels of the façade being especially worthy of note. Among other prominent buildings in New York City, which have been erected during the past few years, in the construction of which terra-cotta has been largely used, are the new Jefferson Market, the Williamsburg Fire Insurance Company's Building, the Mutual Life Insurance Company's new Building, the *Post* Building, Fulton Market, Washington Market, and many other equally well-known structures.

In Chicago this material has been very liberally used in some of the finest residences recently constructed on Michigan Avenue. The first building in which terra-cotta was used in Chicago is the Portland Block, and some very fine terra-cotta work can be seen in the Montauk Block, the Calumet Building, the Open Board of Trade Building, and the Pullman Palace-Car Building.

The Pennsylvania Railroad Station on Broad Street in Philadelphia, presents, in its decoration, numerous examples of the artistic employment of terra-cotta for constructive purposes.

The Pension Building at Washington, D. C., is an immense structure, girting nearly one-fourth of a mile, and above the windows of the first story and extending entirely around the building, there is a beautiful frieze of terra-cotta depicting incidents of the late civil war, and in this frieze there are shown infantry, artillery, and wagon-trains, as in motion; other portions of the structure are ornamented with terra-cotta appropriately employed. But its greatest use as an architectural decorative material, however, is its employment in the building for the Produce Exchange of New York City.

In England and on the Continent terra-cotta is also very largely used in architectural constructions, and even far-off India presents numerous buildings in which this material has been employed of late years for decorative purposes. The terra-cotta used in India, as also that employed for many of the buildings in her Australasian colonies, is manufactured in Great Britain.

The difference in the clay used for terra-cotta and that employed for making bricks is one of degree only. Clay is one of the results of the disintegration and attrition of various primary rocks, and chiefly consists of alumina in combination with silica and certain salts and water. The fusibility of clay depends largely upon its mixture with alkaline salts and alkaline earths, which act as fluxes, and the terra-cotta clays are those which are comparatively free from such admixtures and contain a large proportion of alumina.

The best clay used in the manufacture of architectural terra-cotta is found in Middlesex County, New Jersey. Ninety per cent of the whole product of clay used in the United States for this rapidly-increasing business is taken from the clay beds in this county, and sixty per cent of the manufactured product is furnished by the two firms founded by Alfred Hall, at Perth Amboy, twenty-five per cent being produced in Boston, and fifteen per cent in Baltimore and Chicago.

The Baltimore firm uses clay found in Maryland, while that used by the Chicago manufacturers is derived partly from that city and its suburbs, such clay being employed for making copings and common chimney-pots. The better qualities of clay used for architectural terra-cotta in Chicago comes from southern Illinois and Indiana, while for very fine work both the Baltimore and Chicago manufacturers of terra-cotta, as well as those of Boston, derive their clay from New Jersey.

The clay-beds of New Jersey are practically inexhaustible, and as these immense clay-fields, contiguous to the seaboard and connected

by railroads with all portions of this country, are the most important and characteristic of all that lie within our States, so the architectural decorations which have been modelled from their plastic substance, as well as the beautiful buildings which they adorn, are the most magnificent of modern construction. For a long distance between Woodbridge or Perth Amboy and New Brunswick there are numerous excavations in these clay-fields, which not infrequently extend for more than one hundred feet in depth, and at the bottom of these clay-pits winding roads lead around banks of clay, where numerous gangs of men are constantly at work mining the clay, which is separated into various grades either for use in the State or for shipment to other portions of the country. The very fine clays are sent to New York City and other places for use in the manufacture of wall-papers, while other grades of clay are intended for shipment to Chelsea, Mass., to be utilized in the manufacture of decorative tiles, and still other varieties of clay are to be used at Woodbridge and Perth Amboy for the manufacture of fire-bricks, and the commoner clays for the manufacture of building bricks, while the terra-cotta clays are separated into different grades. Those containing a large percentage of oxide of iron are utilized for the manufacture of red-colored terra-cotta, and the clays containing only traces of iron are intended for the production of light or buff-colored terra-cotta.

TALL CHIMNEY CONSTRUCTION.[1]—I.

"Military Courage" — Tomb of Gen'l Lamoricière. — France. Paul Dubois, Sculptor.

THIS a return for some slight assistance we were able to give them in their investigations, the Messrs. Bancroft have sent us for re-publication the valuable paper on Chimney Construction which they last year read before the Civil and Mechanical Engineers' Society of London. We propose to re-publish it entire, and in that way secure for our readers a permanent record of their investigations: —

It is of very great importance that the best materials and workmanship should be used in the construction of chimney-stacks, and that they should stand independent of all surrounding buildings, both on account of their greater weight, and on account of there being always a swaying motion in a gale of wind. It is also desirable that they should be built in the summer time, and the foundations should have time to settle before erecting the shaft, for great pressure will prevent the setting of any concrete that may be used in the foundations. It is imperative that these rules should be observed, so as to ensure stability, and render less liable the failures and fatal occurrences that are so often recorded in our professional papers. Several instances will be mentioned during the progress of my paper, and I may state that Mr. Edwin Nash, in his paper on "Failures in Construction," mentions that in 1849, soon after being erected, the chimney at the Counterslip Sugar Works, Bristol, fell, and several years ago there was another case at Joynson's Paper-Works, St. Mary Cray, and at many other places, and generally from careless design or bad workmanship, both of which are quite inadmissible in tall structures.

I find upon reference to the various authorities who have written about chimney construction, that there is a wide difference of opinion as to the proper dimensions they should have.

Mr. Robert Armstrong, in the appendix to his "*Chimneys, Furnaces, and Fireplaces*," published by Spon (1866), page 63, says: "It may be set down as an axiom that a *steam-engine chimney cannot be too large*, if only provided with a damper, although ninety-nine in one hundred at the present time (1866) are decidedly too small. They are unable to create a sufficient draught of air through the furnace, consequently a *smoky flame* is produced, instead of a flame with little or no smoke."

Against Mr. Armstrong's opinion we learn from Mr. Peter Carmichael, in his paper on "Factory Chimneys," read before the Institution of Engineers in Scotland, 1865, that his "experience is that most factory chimneys are too large for the work they have to do; not too high (they can hardly be that), but too wide, especially at the top. In our practice (Messrs. Baxter Brothers' flax mills, Dundee), invariably as more boilers and furnaces have been added to a chimney the draught has been improved; and it is obvious, that if the opening in the chimney be too large compared with the whole of the openings in the dampers passing into it, the draught will be reduced. Hence it is very noticeable in many chimneys, which are too large in proportion to the number of furnaces they serve or the coals consumed, or when a new chimney is put up to serve for prospective additional furnaces, that the smoke issuing from such has a very lazy ascent, and they are generally blackened a long way down from the top by the smoke, for when a breeze is blowing the smoke, instead of ascending, falls down the leeward side of the chimney, and clings to it like a ragged black flag."

Mr. Robert Wilson, in his "*Boiler and Factory Chimneys*," published by Crosby, Lockwood & Co., 1877, cautions us against too large a flue; he says: "It is usually considered that the larger the area of the chimney the better the draught, but this is not always the case with lofty chimneys where the gases can *cool down too rapidly* in a chimney of large section, and it has been found in several instances that when chimneys are very large for the number of boilers they serve, or for the quantity of coals burnt, as when a chimney is built to serve for future additions to the boiler power, the draught is improved by the better maintenance of temperature as additional boilers are set to work [thus agreeing almost word for word with Mr. Peter Carmichael]. When the area of the chimney is much larger than the aggregate area of the flues debouching upon it, the diminution of friction and the expansion of the hot gases into a large area, are favorable for the improvement of the draught. But the velocity of the ascent of the heated gases may be very much diminished, and in extreme cases, where the ascending current does not fill the chimney, so to speak, downward currents of air will be produced, especially with the wind in certain directions, to the impairment of the draught."

TEMPERATURE OF ESCAPING GASES.

Mr. Peter Carmichael recorded observations made from time to time for several years on the temperature of the escaping products of combustion in the flues, and at the bottom of the chimneys, and also took notes of the force of the draught, both of which are important elements in considering the value of a chimney for doing its work properly, and he gives the results as follows: —

The temperature is obtained by using small strips of the following metals: zinc, which melts at 700°; lead, 600°; bismuth, 500°; and tin, 440°. Small bits of each of these, about one inch long and one-half inch broad, are pierced with a hole for passing a wire through, and suspended in the flues behind the damper, or at the bottom of the chimney, and the time noted when they are melted. From these observations, frequently repeated and tried under various circumstances, it has been found that the temperature is nearly uniform at 600° behind the dampers; 440° melts at once, 500° generally in less than a minute; 600° melts when the fires are in good condition; and 700° does not melt. So unvarying are these results under different circumstances, that I assume 600° at the bottom of our chimneys as a standard of temperature of escaping products.

FOUNDATIONS.

The foundation of a structure bearing a great weight upon a small surface must be carefully attended to. If a good, natural bottom is not to be obtained, an artificial foundation must be made, either by concreting or driving piles; the former is generally sufficient. At the spot upon which the structure is to be raised, the different strata immediately beneath the surface must be examined by boring until some definite stratum be reached; by a reference to the depth of this bed some idea of the extent of excavation is arrived at. In all cases the foundation must be equally resistant; that is, all parts of it must be capable of bearing the same amount of pressure; if this be not attended to, unequal settlement is sure to result. In all cases the "made earth" must be removed. If the stratum immediately beneath be of clay, gravel, chalk, or other firm bed, and found to be sufficiently thick for a solid bearing, the excavation may be finished and the foundation laid in. In the neighborhood of London, the substratum is generally "made" earth, beneath which, at variable depths, not often exceeding twelve feet, a good bottom is usually met with, when, to save brickwork, concrete may be thrown in until only enough depth is left from the surface to cover the footings of the chimney.

The building for the Albion Mills was erected upon a very soft soil, consisting of the "made ground" at the abutment of Blackfriars Bridge. To avoid the danger of settlement in the walls, or the necessity of going to a very unusual depth with the foundation, Mr. Rennie adopted the plan of forming inverted arches upon the ground, over the whole space upon which the building was to stand, and for the bottom of the dock. For this purpose the ground upon which all the several walls were to be erected was rendered as solid as is usual for building, by driving piles where necessary, and then several courses of large, flat stones were laid to form the foundations of the several walls; but to prevent any chance of these foundations being pressed down, in case of the soft earth yielding to the incumbent weight, strong inverted arches were built upon the ground between the foundation courses of all the walls, so as to cover the whole surface included between the walls; and the abutments or springings of the inverted arches being built solid into the lower courses of the foundations, they could not sink unless all the ground beneath the arches had yielded to compression, as well as the ground immediately beneath the foundation of the walls. By this method the foundations of all the walls were joined together so as to form one immense base, which would have been very capable of bearing the required weight, even if the ground had been of the consistence of mud; for the whole building would have floated upon it as a ship floats in water; and whatever sinking might have taken place would have affected the whole building equally, so as to have avoided any partial

[1] A paper by R. M. Bancroft and F. J. Bancroft, read before the Civil and Mechanical Engineers' Society.

depression or derangement of the walls; but the ground being made tolerably hard, in addition to this expedient of augmenting the bases by inverted arches, the building stands quite firm.

Mr. Edwin Nash, F. R. I. B. A., says it is possible to build well upon a uniform bed of peat by carefully spreading the weight over the whole surface, and many structures have been so built. Most of the houses in the neighborhood of Finsbury Square and Finsbury Circus stand upon a somewhat peaty bed, and the site of the London Literary Institution had a bed of that sort. If the whole of that building had been founded upon the undisturbed surface of the peat, instead of cutting through it for the main external walls only, as was done, there would probably have been few or perhaps none of those irregular settlements which were occasioned by some subsidence of the internal walls, from the drying up of the peat a long time after the building had been erected, and which rendered underpinning necessary.

A good example of the value of concrete is afforded by a chimney that was built by Mr. Clegg, at Fulham, in 1829. The foundation was a quicksand. After the excavation was got out to the depth of fifteen feet, an iron rod sank, with little more than its own weight, fifteen feet more; it was, in fact, Mr. Clegg says, as bad a foundation as could possibly occur.

The pressure on foundation of the Edinburgh Gas Works Chimney is eight and one-half tons per square foot.

The piers of Charing Cross Railway bridge, resting on the London clay, bear a weight of six tons per square foot superficial, and show no sign of settlement.

TOWNSEND CHIMNEY, PORT DUNDAS.

The highest church spire in Europe is that of St. Nicholas, Hamburg, four hundred and seventy-two feet; that of Strasburg four hundred and sixty-six feet from ground surface. Both these heights exceed that of the "Townsend Chimney," Port Dundas, Glasgow; its total height from foundation to top of coping being four hundred and sixty-eight feet, and from ground level to summit four hundred and fifty-four feet. The history of its construction, and of its threatened failure when nearly completed, will therefore be of great interest to all who have made chimney-shafts or stalks their study, and, indeed, to architects and engineers in general. The chimney was designed and built by Mr. Robert Corbett, Bellfield Terrace, Duke Street, Glasgow, for Mr. Joseph Townsend, Crawford-street Chemical Works, Port Dundas.

No piles were used in the foundation, which is built on "blue till," or clay, which is as solid and compact as rock. The foundation consists of thirty courses of bricks on edge, the lowest course being fifty feet, and the topmost course thirty-two feet diameter. This foundation was commenced on July 30, 1857, and finished on August 20 of the same year.

The erection of the shaft was continued until November 11, 1857, (excepting from September 3 to October 5, during which period operations were suspended). This closed the first season. The second season commenced on June 10, 1858, and closed on October 16 in the same year, the stalk at the latter date being two hundred and twenty-eight feet in height. The third and last season commenced on June 3, 1859, and the coping was laid on October 6 of the same year; but the work was suspended from September 15 to October 5, in consequence of the chimney swaying. During this interval it was restored by twelve cuttings with saws on the opposite side of the inclination, as detailed hereafter.

The inside lining or cone is of nine-inch fire-brick, and about sixty feet in height, built distinct from the chimney proper, with air-space between, and covered on top, to prevent dust from falling in, but built with open work in the upper four courses, so as to allow of air passing into the chimney.

The size of the bricks used in the construction of this chimney was ten inches by four inches, by three and one-half inches, and the number consumed was as follows: —

Common bricks in chimney . . .	1,142,532
Composition and fire-bricks in cone .	157,468
Total	1,300,000

The bricklayers' time was: —

In 1857, 316 days of 10 hours each,
In 1858, 431½ " " "
In 1859, 423½ " " "

giving a total of 1,171 days' time occupied in building the chimney, which gives on an average 1,110 bricks built per day of ten hours by each bricklayer.

Besides the above number of bricks used in the chimney, there were also 100,000 used in constructing flues, etc. The total number of bricks laid in chimney and flues was 1,400,000, the weight of which, at five tons per thousand, is 7,000 tons.

The cope is of vitrified till, purposely made about nine inches wide by three inches thick, flanged over wall of chimney, and jointed with Portland cement.

The top of the chimney was struck by lightning some time since, which displaced and threw to the ground some pieces of coping, and upon inspection only one of the flanges were found to be broken.

Iron hoops were built in at a distance from the surface of nine inches at the bottom, and four and one-half inches at the top, and at intervals of twenty-five feet in height.

The thickness of the wall of the chimney varies as follows, commencing, of course, at the ground level: —

1st	section,	30	feet in	height,	5	feet	7 inches thick.
2d	"	30	"		5	"	2 " "
3d	"	30	"		4	"	10 " "
4th	"	40	"		4	"	5 " "
5th	"	40	"		4	"	0 " "
6th	"	40	"		3	"	7 " "
7th	"	40	"		3	"	2 " "
8th	"	40	"		2	"	9 " "
9th	"	40	"		2	"	4 " "
10th	"	52	"		1	"	11 " "
11th	"	52	"		1	"	7 " "
12th	"	20	"		1	"	2 " "
Total.		454	feet from ground line.				

The height originally contemplated for the chimney was four hundred and fifty feet; but when about three hundred and fifty feet up it was proposed to add about thirty-five feet to the original height, making the total height four hundred and eighty-five feet; hence the increased height of the tenth and eleventh sections. But on the completion of the eleventh section this idea was abandoned, and therefore only twenty feet of the last thickness were added.

The building was not built by contract, but by day wages, as Mr. Townsend was not quite certain to what height he would carry it, or what deviation might be made in course of construction from the proposed plan. Three different dimensions were calculated by the builder; those carried out were the greatest of three. The builder calculates the cost of the chimney and cone (exclusive of iron hoops in chimney and flues) at from £5,500 to £6,000. Mr. Townsend estimates the cost of the whole, including flues, iron hoops, machinery and scaffolding at £8,000.

On September 9, 1859, the chimney was struck by a gale from the northeast, which caused it to sway; but the builder does not attribute the action to the gale alone, but to the pressure of the whole pile on the scaffolding, which was so constructed as not to yield to any pressure caused by a slight settling down. The additional pressure thrown by the wind to the lee-side of stalk (the mortar of which was not solidified) was consequently too great for the scaffolding to bear, and caused the splice of one of the uprights to give way by abrasion, making the fibres of the wood to work in each other. The ends of the planks forming the scaffolding were placed about five feet or six feet apart vertically, and were tightly built into the masonry; but had a little space been left over each, the stalk would have subsided uniformly, and would possibly have withstood the gale. The builder observed the error, but too late. He thinks the deflection commenced at from one hundred feet to one hundred and fifty feet from the ground, so that the foundation and heaviest portion remained firm. Had not the process of sawing been commenced promptly and continued vigorously, in all likelihood the chimney would have fallen. Even during the earlier part of the process of sawing, Mr. Townsend, who was on the ground the whole time, observed the deflection increasing, but as the sawing progressed he observed that the deflection got a check, and the chimney came-to gradually. The chimney was seven feet nine inches off the perpendicular, and seven feet less in height than before it swayed; but when brought back it gained its original height, at which time it was not completed by five feet.

Mr. Townsend made his observations during the sawing-back by taking a position in the room of the works near by the chimney where he had a full view of it, and fixing the ends of two pieces of twine to a beam above, he formed them into two plummet-lines in a line with the stalk, and with these alone he directed the adjustment of the colossal mass.

The sawing-back was performed by Mr. Townsend's own men, ten working in relays, four at a time sawing, and two pouring water on the saws. This work was done from the inside, on the original scaffolding, which of course had not been removed. Holes were first punched through the sides, to admit the saws, which were wrought alternately in each direction at the same joint. This was done at twelve different heights from the ground line, viz., 41 feet, 81 feet, 121 feet, 151 feet, 170 feet, 189 feet, 209 feet, 228 feet, 240 feet, 255 feet, 277 feet, and 326 feet. The men discovered when they were gaining by the saws being tightened with the superincumbent weight. It took six men continuously to do this work, at a cost of £400.

Prior to the sawing operations they had taken out and altered the bolts of the scaffolding, so as to relieve the pressure on it. This was done to meet the want of a little spare space over the ends of the uprights, as before stated.

PROTECTION FROM LIGHTNING.

In answer to inquiries I made, Mr. Townsend says; "Our stack is protected from lightning by two copper-wire conductors, half an inch thick, opposite each other all the way up, jointed to one pike fixed to the chimney, but standing above it, at the top. It was erected by a Steeple Jack, of Manchester, immediately after the chimney had been put straight, about 1859 or beginning of 1860. The chimney had been several times struck by lightning and slightly damaged. It is intended to put three more pikes at the top, and take the conductor round the chimney from pike to pike, to give a better opportunity for absorption of the electric fluid."

THE ILLUSTRATIONS.

[*Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.*]

THE "DAKOTA" STABLE, NEW YORK CITY, MESSRS. CHARLES W. ROMEYN & CO., ARCHITECTS.

THIS structure forms part of a scheme started some years ago by the late Edward Clark, and since continued by the estate, for the improvement of the "West side," bordering on Central Park. The building is intended to afford stable accommodations for the many tenants of the estate and for the general public of the neighborhood who, until its completion, have been without such a convenience. The walls of the building are started on a base of dressed bluestone, Croton brick and terra-cotta being employed above to the line of cornice, which, together with the dormers, is of copper. A prominent feature in the plan is the entrance court, thirty feet by thirty feet in size, the walls of which are lined with imported enamelled brick. From this court ingress is obtained to the carriage floors. By an easy incline horses ascend to the second floor, which contains the stalls. The third floor is divided by a large hall at each end, and contains space for storage of feed and carriages. The construction is of the most substantial kind, and the ventilation is perfect. The total cost (including blasting for cellars, etc.,) was $70,000.

COMPETITIVE DESIGN FOR A STABLE, SUBMITTED BY "*Much in Little Space.*"

FOUNDATION to be of brick or stone piers under main walls and partitions. Construction to be of frame. Outside walls covered with sheathing boards. Plaster, rough-cast, in panels of first story, as shown, to be plastered on iron lath; sawed pine shingles on lower part. Roof to have rafters 2″ x 8″, covered with one-inch roofing boards and sawed pine shingles. First story to have interior walls and ceiling covered with seven-eighth-inch Georgia pine, which is simply oiled. No paint, except outside trimmings. Chimney built of stock brick, laid in red mortar. Loft is left unfinished in one large room; to have good spruce flooring.

NEW YORK, December 18, 1884.

I will build stable from plans and specifications for sum of $1,500.

P. B. MCENTYRE,
Builder.

A CLOCK-CASE DESIGNED BY MESSRS. RUSSELL & HUIDEKOPER, ARCHITECTS, WORCESTER, MASS.

THE sketch shows a case designed for an old clock which was bought at a sale of antiquities in Paris. The clock, whose mechanism was considerably wrecked at the time of its purchase, is now in working order. It has thirteen bells, twelve of which are for the chimes; these play at the hour and half-hour. The works were examined by several clock-makers in Paris, each of whom asserted that, judging from the workmanship and the kind of iron employed, it had been constructed in some monastery in the Netherlands in the sixteenth century. The dial is carved out of a single piece of black-walnut, and the color decoration on it is still in good preservation. The figures in relief representing the hours are black on a gilt background; the rest of the face is dark blue, adorned with gilt stars. The cherub heads are also colored, their wings being bright red. The two conventional-looking fish beneath the dial are black; their eyes and mouth are touched up with a little vermilion.

THE JERUSALEM CHURCH, BRUGES, BELGIUM.

THIS building, on the outskirts of the city, derives its name from the fact that beneath the choir is a model of the Holy Sepulchre, placed there by a burgomaster of the city, one Messire Anselm Adornes, who twice visited Jerusalem to insure the accuracy of his model. The building itself dates from the middle of the fifteenth century.

HOUSE FOR DR. H. A. SMITH, CINCINNATI, O. MR. S. E. DES JARDINS, ARCHITECT, CINCINNATI, O.

HOUSE FOR H. L. RICHMOND, ESQ., MEADSVILLE, PA. MR. W. S. FRASER, ARCHITECT, PITTSBURGH, PA.

OLD CHATEAU NEAR ANTWERP, BELGIUM.

THIS building contains a collection of antiquities of an archæological character.

SPECIFIC GRAVITY OF AMERICAN WOODS. — Of the four hundred and thirteen species of trees found in the United States, there are sixteen species whose perfectly dry wood will sink in water. The heaviest of these is the black iron-wood (*Condalia ferrea*) of Southern Florida, which is more than thirty per cent heavier than water. Of the others, the best known are the lignum vitæ (*Guaiacum sanctum*) and mangrove (*Rhizophora Mangle*). Another is a small oak (*Quercus grisea*), found in the mountains of Western Texas, Southern New Mexico and Arizona, and westward to the Colorado desert, at an elevation of five thousand to ten thousand feet. All the species in which the wood is heavier than water belong to semi-tropical Florida or the arid interior Pacific region.

ARCHITECTURE AT THE ROYAL ACADEMY. — I.

LONDON, May, 1885.

ARCHITECTURE has now a room of her own at Burlington House. During the past year Mr. Norman Shaw has been engaged in adding three new galleries to the already overgrown number of rooms, so that there are now eleven rooms set apart for oil-paintings, two, the central hall and the lecture-room, for sculpture, a new room for water-colors, another for architecture, and a third for engravings and etchings. There are over two thousand works in the exhibition, and the whole place strikes one as getting far too big and not nearly select enough. Many works are hung far too high, and they are all too crowded together, so that it is quite impossible to do justice to much more than half the number on the walls. To revert to the new rooms, that for water-colors is the finest of the three. It is a square, well-proportioned apartment, with a deep cove enriched with good plaster-work. The "black and white" room opens out of the last, and is a small cabinet, but quite large enough for its purpose. The architectural room is a parallelogram in plan, rather too narrow for its length, and hardly large enough, to our thinking. It has octagon angles running up about ten or twelve feet high — a pleasing as well as useful feature, as the drawings on these angles are seen to very good advantage. It has a plain panelled frieze and a lantern light running the whole length of the room. The ceiling is manifestly unfinished, and we can well imagine Mr. Shaw intends doing something more with the frieze and the ceiling than at present meets the eye. The three new rooms have handsomely moulded doorways and low dadoes all in American walnut; between the dado and the cornice the walls are covered with a paper in pleasing pattern in two shades of red — a very good tone for both color and line drawings. The rooms, as a set, are much more artistic in feeling and detail than the old galleries out of which they open, so that one wishes Mr. Shaw would take the latter in hand as well and see what he can do to improve them — the old water-color gallery, for instance, is a caution.

In the architectural room there are hung some two hundred and twenty-five works, none of them very large, but from the high average quality of the display we think the architects have fairly justified the position they hold in the Academy and the need for the better accommodation now provided. We have to regret the absence of any work from Mr. Norman Shaw, and, again, for the second year of anything from Mr. Bodley. This is far from satisfactory to begin with, but Mr. Pearson and Mr. Waterhouse are both in evidence. Mr. Pearson sends his design, shown in elevation and section, for the great central tower and spire of Peterborough Cathedral, which it has just been decided is not to be carried out. The Norman arches at the crossing, and all the Norman work in the stages immediately above them are carefully restored; above this rises a lofty belfry stage in fourteenth-century Gothic with parapet and pinnacles, the whole being crowned with a magnificent spire. It is certainly the finest tower and spire we have ever seen Mr. Pearson design, whatever may be said on the side of archæology: it is much to be regretted such a splendid opportunity is to be lost to us from a purely architectural point of view. Mr. Pearson seems to be most unfortunate in the matter of his towers; the majority of his great churches are still waiting for them; alas, we fear they may wait too long, as far as he is concerned, and this makes it all the more regrettable that now the Peterborough spire is not to be done at all. We must say a word as to the drawings of this spire. They are most beautifully executed, full of the spirit of mediæval work. Mr. Pearson sends also his drawings for the Restoration of Westminster Hall, about which much has been written and spoken lately. It is some satisfaction to think that *they* at least are to be carried out. One select committee which has been sitting on the matter for months past have at last agreed to approve of Mr. Pearson's designs, leaving only the question of the raising of the towers of the hall until a future time; doubtless, now, the whole will be carried out as Mr. Pearson wishes.

Mr. Waterhouse sends in one of his masterly water-colors, his design for the National Liberal Club — a clever Renaissance work. The only incongruity is the great tower at the angle, which really seems to belong both to a different style and a different building. The more one looks at it the more one is convinced there must be something wrong somewhere. The two are quite out of harmony with each other, so that the tower looks like an after-thought, and not the proverbial "best" of second thoughts this time.

The other Associate, Mr. George Aitchison, has a view of the interior of Royal Exchange Assurance Office, Pall Mall, — a design of little interest, principally remarkable for its enriched plaster ceiling. Mr. T. G. Jackson is strong in collegiate work. First we have the new quadrangle of Trinity College, Oxford, in its architect's favorite style — a little bit restless, perhaps, but with many fine "bits" and details about it, particularly the double gable of one of the returning wings, which, with its tall chimney shafts and carefully designed windows, has a most telling effect. It is altogether a most important work, and looks thoroughly like Oxford itself, as all Mr. Jackson's work there does. The new buildings in Merton Street, for Corpus Christi College, have also the Oxford feeling about them, though not

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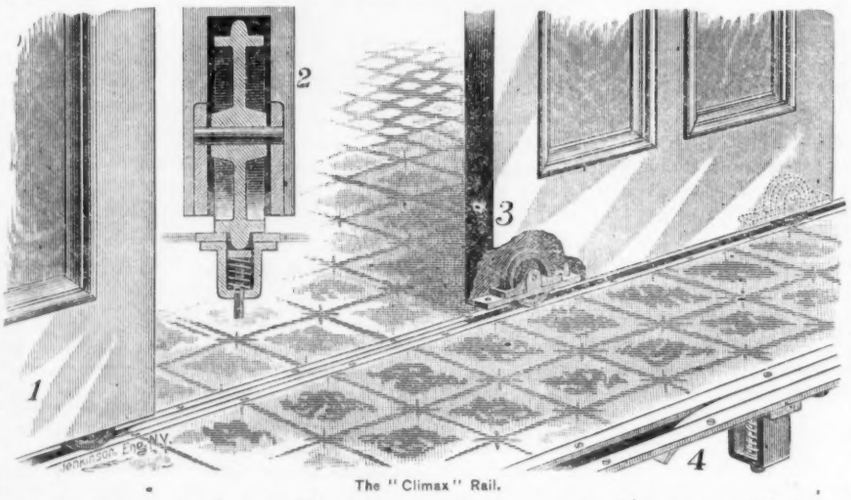
KIDDER'S POCKET DRAWING TABLET AND TOOLS.

Messrs. Frost & Adams, Importers and Wholesale and Retail Dealers in Artists' Materials, Architects', Engineers' and Draughtsmen's Supplies, have recently added a new combination instrument for the use of mechanics, designers, draughtsmen, inventors and wood-engravers. It may justly be styled an outfit of the most useful of drawing-instruments and materials combined within the limits of an ordinary pocket memorandum-book. Not only does it embrace a T-square, a graduated steel scale, a pair of dividers, a pencil, a protractor, a drawing-board, and paper ready at any time and place for practical use, but the instruments are particularly useful also on larger boards and for various other work. The dividers describe any circles from one thirty-second of an inch to eighteen inches in diameter. The T-square is steel, accurately graduated by United States standard, seven inches, has a swivel head and is useful for taking angles, cross-hatching, and for dimensions. The device consists of a light, strong leather board case, four inches by seven inches, five-sixteenth inches thick, containing the tools. One side is a protractor. To the reverse side is attached a tablet of forty sheets of paper. An arrangement so simple and practical can but find a ready sale. It is made in a most substantial manner.

DRAUGHTSMEN'S ADJUSTABLE CURVE RULER.

Messrs. Frost & Adams have recently introduced another new instrument, supplying a long-felt want, an adjustable curve ruler. These tools are intended as a valuable addition to the draughtsman's outfit for drawing irregular curves. Each tool combines every form of a curve in one, and can be instantly adjusted to and retained in any form. It is made in two styles. The larger is thirty inches in length, having a ruling edge of thirty inches. The smaller is fourteen-and-one-half inches long, and has a ruling edge of ten inches. The ruling edge of the large size is a thin, flat band of steel. It is provided at the back with sleeves or staples to receive the retaining coil which holds the ruling edge to any required curve. It consists of a cylinder of pure-drawn lead, wound with a plated wire spiral. It is inserted within the sleeves and is held in place by a set-screw at the centre of the tool. This coil will wear a long time and can be quickly replaced. The small tool is provided with a flexible ruling edge, which is cylindrical in cross section, so that by slightly inclining the pen, two or more parallel lines can be drawn without moving the rule. The ruling edge is held to the required curve by a strip of pure-drawn lead, which is covered by sleeves, and slides between two ribbons of tempered steel. The lead is held in place by a set-screw and can be replaced if it becomes worn by continued use. The construction of these tools insures a smooth and uniform curve, without kinks or breaks. The tools are commended by leading draughtsmen and meet a long-felt want. They are well made in every part and neatly finished in nickel plate.

FROST & ADAMS,
37 Cornhill, Boston, Mass.



The "Climax" Rail.

THE CLIMAX RAIL.

The "Climax" Rail, for sliding-doors, a cut of which is shown herewith, is a durable, simple and ingenious track, which will commend itself to architects and builders. It consists of two outside and one central rail of brass, the central rail being kept in place by springs which allow it to be depressed, when the shoulder of the sheave presses upon it and immediately brings it up to the level of the outside rails, when the door is pushed back into the recess or pocket in the wall.

Among its advantages over other rails are these: that there is *no projecting* rail, as in other tracks; that as the shoulder of the sheave runs below the surface of the side rails it keeps the door on the track and absolutely prevents the door from jumping off; that the door runs smoothly and with no appreciable friction; that the sheaves furnished are anti-friction and made from the most approved patterns. The cost of laying the rail is very slight, and it does not require special construction of the door-casing, as in hanging doors from above, and can be put in old houses as well as in new ones.

We call attention to the company's advertisement in another column, and as the business managers we will send models, circulars and price lists on application.

MESSRS. GEO. F. TAYLOR & WOOD,
134 Water Street, New York.

ON PORTLAND CEMENT.

The increase in the construction of substantial buildings and important Public Works in this country has led to a notable increase during the last few years of the consumption of Portland cement.

Owing to the improved methods employed in its manufacture and to the greater number of works recently established, the price for this material has declined considerably, so that the best brands of Portland cement can now be purchased in this market at a very reasonable figure.

Occasionally during the last few years the supply of Portland cement did not keep pace with the demand, which encouraged a good many unknown brands to come to this market, the quality of which was not always of the best, but for want of sufficient arrivals of the better known brands, the inferior and unknown brands also found a sale, though at somewhat lower figures.

When the dealers in Building Materials who had hitherto kept strictly to the best brands, found that the quality of the lower priced cements was not objected to by the consumers, they asked for more, and a regular demand for cheap Portland cements was created.

This again resulted in the importation of still lower priced brands and some very poor

and even adulterated Portland cements were sent to this market, which of course can be sold here for much less than the best and more carefully made cements. Some even went so far as to import Roman cements, quick-setting and of no strength whatever, which expand in volume and which are sold in Europe much below the price of Portland cement, and endeavored to sell them for Portland cement, bearing on the label fictitiously the name of Portland cement, though such cement is not equal to the quality of ordinary Rosendale cement.

A good deal of the work done with such cements must necessarily be very much inferior to what the Engineer or Architect intended it to be, when he perhaps specified that the "best Portland cement" was to be used.

In the absence of a uniform and practical system of testing the cement, the Builder as well as the Architect is often unable to judge as to which of the numerous brands now in the market is of good or poor quality, and little can be known here of the reputation which some of the cements may have acquired in Europe.

It is therefore of the utmost importance that Architects and Engineers, as well as Masons, should not permit any Portland cement to be used unless they are fully satisfied that its quality is perfectly reliable and that its reputation for strength and uniformity is well established. Though the price of such a cement, by reason of its more careful manufacture, may be a trifle higher than that of less favorably known brands, the difference in cost is fully made up by the much greater difference in quality and the certainty of always producing reliable work.

No Portland cement should be considered "good enough" or "answer the purposes," unless it is the very best obtainable and careful inquiry should be made as to which brand that is.

We are happy to say that some of the very best European brands continue to come regularly to this market, among which the Dyckerhoff Portland cement has acquired the reputation of not only being the most excellent cement made, but also of having attained a uniform and never varying quality.

The Messrs. Dyckerhoff & Sons (represented by myself) after having enlarged the capacity of their works to the annual production of half a million barrels, are to be congratulated upon the results of their persistent efforts to produce the best possible Portland cement.

Their brand has been used in this country in a number of the most notable buildings, such as the Washington Monument, Statue of Liberty, etc., and is to be found for sale in nearly every large city of the Union.

Wherever Engineers, Architects or Masons have the choice between a cement of such acknowledged excellence and some comparatively unknown brand of perhaps questionable quality, at even a *lower figure*, it should not be difficult for them to decide which one to employ.

E. THIELE,
78 William St., New York, N. Y.

BUSINESS CHANGES.

Having severed my connection with the J. L. Mott Iron Works, I beg to notify you that I have associated myself with the Myers Sanitary Depot, 92 Beekman Street, New York.

Being the patentee of McFarland's Automatic Flushing-Tank, McFarland's Bath and Basin Waste, the "Inodoro" and "Purita" Water-Closets, etc., I expect to be able in the near future to enlarge the present stock of fine sanitary goods now manufactured and imported by the company with which I am now connected.

S. G. McFARLAND.

Providence, R. I., May 15, 1885.

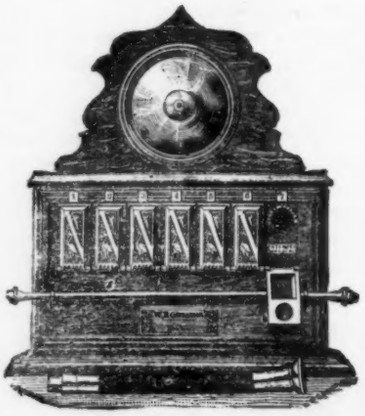
We have this day removed our main office to the works at Nashua, N. H., where all orders and correspondence should be addressed. The office of the Treasurer will remain at Providence, R. I., where all remittances should be sent.

By the above change consumers and dealers are brought into more direct communication with the source of supply, to the advantage of all concerned, in the matter of economy and dispatch in the transaction of business.

We shall continue to have arrangements in all the principal cities for supplying, more thoroughly than ever before, the demand for our products.

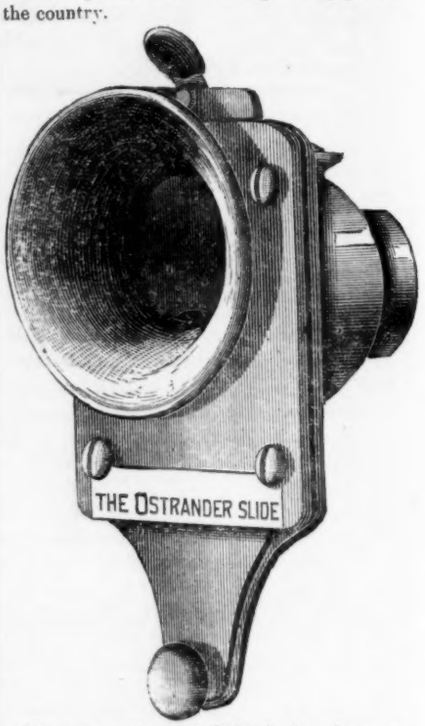
AMERICAN SOAPSTONE FINISH CO.,
Nashua, N. H.

THE SPEAKING-TUBE ANNUNCIATOR.



The accompanying engraving shows an Oval or Speaking-Tube Annunciator connected with seven rooms. The indicator for Room 7 has been thrown down by the pressure of a slight blow from the person at that apartment and has rung the gong-bell to call the attendant to answer at that tube; when the conversation is through, the Indicator is replaced in its upright position, as 1, 2, 3, 4, 5 and 6 show. The portable mouth-piece is used to insert in opening of indicators to reply or alarm with.

The system of Oral or Speaking-Tube Annunciators consists of an annunciator for as many rooms or apartments as may be desired, and by this method a line of tubes is necessary to each room from the office. It shows by such a system that speaking communication is effected both ways, and this gives direct communication and saves the time and double-running of messenger or hall boys. Now, if electric or other systems are used, there is no speaking communication, and ours saves double journeys. The advantage of direct speaking communication is that it is always more desirable and quicker than by other methods. We recommend its use in hotels, factories, apartment-houses and residences, and the advantages above mentioned will fully repay its adoption, and it saves all the expenses of batteries and costly electric repairs. It being self-acting, and without springs, batteries or clock-movements, makes it by its simplicity and A1 workmanship the most desirable instrument ever placed before the public. It has a safety latch that prevents false indication The alarm in the room of a hotel guest awakens the occupant without banging on the doors and disturbing others, and also in case of fire the whole house can be awakened from the office. These Annunciators are finished in woods to match the wood-work. By writing to us and stating what you require and the kind of building and dimensions, we will give the benefit of our experience and suggestions. We make a specialty of fitting up these Annunciators, and have competent mechanics to go to any part of the country.



The Ostrander Slide Whistle has the superior advantages of a prominent and accurate indicator. The wear of the slide being easily taken up without taking down the body, as the front plate unscrews and is not riveted. The mouth-piece is stationary, and the sound is sent direct into the speaking-tube without interruption. It is durable, neat, and made in the best manner.

W. R. OSTRANDER & CO.,
21-23 Ann Street, New York City.

HOUSE-HEATING BOILER.

Catchpole's Improved House-Heating Boiler "Florida" places within the means of every house-owner a reliable steam-heating boiler of cost proportionate to the capacity required. Not only is the first cost of "Catchpole's Improved Florida" Boiler comparatively small, but the expense for coal to run one, is very greatly reduced, from that required for any other known method of artificial warming — be it stoves, hot-air furnaces, or other make of steam boilers — and the

saving thus made each year in coal alone, makes the purchase of "Catchpole's Improved Florida" a wise and prudent investment, aside from the comforts to be enjoyed in a home of a uniform Florida temperature throughout our long severe winters.

"Catchpole's Improved Florida" Boilers are so constructed that a dangerous explosion from steam or gas is a *positive impossibility*, and its sectional form admits of its being conveniently handled through doors and stairways of ordinary size, into the basement or cellar, where, requiring *no brickwork to be set in*, they occupy but little space and radiate but little heat.

For further information, send for illustrated descriptive catalogue and testimonials, mailed free, by

THE FLORIDA BOILER WORKS,
GENEVA, N. Y.

BUILDING INTELLIGENCE

Chicago. (*Continued.*)

C. F. A. Spencer, 2 two-st'y dwells., 3326 to 3328 Wabash Ave.; cost, $18,000; architect, S. S. Beman; builder, E. Sturtevant.

H. E. Bucklan, six-st'y laboratory and dwell., 275 to 276 Michigan Ave.; cost, $40,000; architect, O. Cobb.

A. Eilart, three-st'y flats, 60 Mohawk St.; cost, $5,000; architect, J. Pruhns.

P. K. Schempp, two-st'y store and dwell., 869 Halsted St.; cost, $4,500.

J. Youngren, three-st'y flats, 223 Townsend St.; cost, $3,500.

S. Peterson, three-st'y store and flats, 302 West Erie St.; cost, $6,500; builder, J. Oleson.

H. Schmeltekopf, three-st'y store and flats, 676 West Twelfth St.; cost, $5,000; architect, Korbach.

J. Zeeb, three-st'y store and dwell., 2717 Wentworth Ave.; cost, $4,000; architect, J. Frank.

Berlighelmer & Stensland, two-st'y store and hall, 235 to 237 Milwaukee Ave.; cost, $6,000; architect, J. J. Flanders.

Mrs. H. R. Huntley, two-st'y dwell., 3336 Calumet Ave.; cost, $5,000.

Mrs. E. E. Springer, four-st'y dwell., Lasalle and Division Sts.; cost, $20,000; architects, Burnham & Root.

G. Dickinson, two-st'y dwell., 2448 South Park Ave.; cost, $4,600; architect, W. A. Furber.

Conrad Furst, six-st'y store, 229 to 235 Franklin St.; cost, $60,000; architects, Furst & Rudolph.

J. Zizieck, two-st'y flats, 546 West Twentieth St.; cost, $4,500.

J. Bile, three-st'y flats, 718 Throop St.; cost, $4,500.

S. M. Hall, 2 two-st'y dwells., 437 Oakley St.; cost, $5,000; architects, Wilson & Moody.

G. W. Hinkley, boiler house, Thirty-seventh and Ullman Sts.; cost, $3,000.

E. McLachlan, two-st'y dwell., 177 North May St.; cost, 13,000.

Farragut Club, two-st'y club-house, 3016 to 3018 Lake Park Ave.; cost, $25,000.

B. J. Bernsten, three-st'y dwell., 199 to 201 North Union St.; cost, $10,000; architect, C. O. Hansen.

S. F. Johnson, 3 three-st'y stores and dwells., 1305 State St.; cost, $23,000.

W. Jansehon, two-st'y dwell., 372 Noble St.; cost, $4,000; architect, Wm. Runde.

Mrs. L. Litchfield, two-st'y dwell., 3238 Groveland Park Ave.; cost, $5,500; architect, A. H. Lowdon.

Sarah P. & Augusta L. Jones, 3 three-st'y stores and dwells., 3815 to 3819 Cottage Grove Ave.; cost, $7,500.

M. Dencer, two-st'y dwell., 439 Twenty-sixth St.; cost, $4,500.

Carter H. Harrison, 5 two-st'y dwells., 578 to 588 Ashland Ave.

A. J. Walker, seven-st'y carriage repository, 336 to 338 Wabash Ave.; cost, $35,000.

J. Costello, 3 three-st'y dwells., 358 to 364 Centre Ave.; cost, $25,000; architect, T. Karls.

E. S. Talbot, 4 two-st'y dwells., 438 to 444 Elm St.; cost, $15,000; architect, L. J. Halberg.

J. C. McElroy, two-st'y dwell., 821 Washington Boul.; cost, $8,000; architect, Wm. Longhurst.

H. Raymond, two-st'y dwell., 3243 Groveland Park Ave.; cost, $5,000.

G. A. McClellan, two-st'y dwell., 3241 Groveland Park Ave.; cost, $5,000.

C. Steger, three-st'y flats, 607 North Halsted St.; cost, $6,000.

Gurra & Scorsi, three-st'y flats, 212 West Harrison St.; cost, $3,000.

C. Williams, two-st'y dwell., 3213 Forest Ave.; cost, $4,000.

H. Wellmann, three-st'y flats; cost, $8,000.

G. Laehrke, two-st'y dwell., 1321 Fowler St.; cost, $2,500.

Geo. Theobold, two-st'y dwell., 847 Ashland Ave.; cost, $3,000; architects, Benison & Sayer.

F. Luther, three-st'y flats, 285 Dayton St.; cost, $3,000.

Mrs. A. Interrieden, two-st'y dwell., 527 North State St.; cost, $10,000; architect, L. G. Halberg.

N. Maurer, two-st'y flats, 386 South Morgan St.; cost, $4,500.

W. Lester, 2 two-st'y dwells., 261 to 263 Park Ave.; cost, $6,000; architect, McAfee.

Mrs. N. G. Burling, two-st'y dwell., 297 Belden Ave.; cost, $4,000; architect, Burling.

Geo. E. Wood, three-st'y dwell., 2803 Prairie Ave.; cost, $25,000.

J. L. Fulton, three-st'y store and dwell., 729 Madison St.; cost, $10,000.

Geo. Therhold, two-st'y dwell., 847 South Ashland Ave.; cost, $3,000.

J. Stein, three-st'y dwell., 601 Dearborn Ave.; cost, $12,000.

M. Morgenthan, three-st'y dwell., 599 Dearborn Ave.; cost, $12,000.

Libby, McNeill & Libby, additional story to packing-house; cost, $4,000; builder, J. Miller.

F. Schweizer, three-st'y store and dwell., 317 East North Ave.; cost, $5,000; architect, A. F. Boos.

Chas. Crede, three-st'y flats, 485 Ashland Ave.; cost, $6,000; architect, P. Ruehl.

H. R. Wilson, 2 two-st'y dwells., 3229 to 3231 Rhodes Ave.; cost, $6,000; architect, H. R. Wilson.

H. T. Thompson & G. O. Clinton, 2 three-st'y dwells., 35 to 37 Bellevue Pl.; cost, $12,000; architect, F. B. Townsend; builder, Geo. Lehman.

G. W. Haskell, three-st'y dwell., 410 Ontario St.; cost, $5,200; architects, Burling & Whitehouse.

A. Berlin, two-st'y dwell., 261 Bissell St.; cost, $5,000; architects, Schaub & Berlin.

J. Linklater, two-st'y dwell., 1314 Van Buren St.; cost, $2,500.

A. Bennett, two-st'y dwell., 704 Fulton St.; cost, $3,500; architect, Austin.

C. F. Bulkley, 2 two-st'y dwells., 883 to 885 Washington Boul.; cost, $11,000.

A. Schlausing, two-st'y store and dwell., 546 Thirty-first St.; cost, $3,000.

H. Lenz, two-st'y dwell., 222 Eighteenth St.; cost, $3,800; architect, P. W. Ruehl.

Temple Pump Co., three-st'y factory, 17 to 27 Meagher St.; cost, $15,000.

Geo. Wood, three-st'y dwell., 111 Aberdeen St.; cost, $5,000.

F. E. Walther, three-st'y dwell., 162 Tremont St.; cost, $4,000.

H. Winter, four-st'y store and flats, 281 to 283 West Chicago Ave.; cost, $18,000; architect, G. Glatner.

J. H. McAuley, 2 two-st'y dwells., 3313 to 3315 Calumet Ave.; cost, $7,000.

C. M. Stokes, three-st'y dwell., 882 Washington Boul.; cost, $5,000; architect, Wm. Thomas.

P. Clancy, two-st'y flats, 315 Lincoln Ave.; cost, $4,00[illegible].

M. Goff, two-st'y dwells., 510 Monroe St.; cost, $10,000; architect, J. J. Flanders.

Weinberger & Bedacht, 2 three-st'y stores and flats, 219 to 221 Wells St.; cost, $15,000; architects, Harald & Hansen.

T. Huper, 2 two-st'y flats, 206 to 208 Morgan St.; cost, $12,000; architect, T. Karls.

T. Huper, two-st'y barn, Morgan St.; cost, $3,000; architect, T. Karls.

T. Agars, two-st'y dwell., 267 Irving Pl.; cost, $3,000; architect, T. Karls.

Mrs. A. McEwen, two-st'y dwell., 550 Warren Ave.; cost, $3,000.

G. Atzel, three-st'y store and dwell., 106 Wells St.; cost, $5,500.

A. Umhofer, three-st'y store and dwell., 3161 Wentworth Ave.; cost, $5,000.

C. S. Barnes, 2 three-st'y dwells., 339 to 341 Monroe St.; cost, $8,000; architects, Edbrooke & Burnham.

F. Bay, two-st'y store and dwell., 577 Thirteenth St.; cost, $5,500; architect, P. Ruehl.

J. Quinte, two-st'y dwell., 235 West Division St.; cost, $3,000; architect, Weissner.

R. Bartells, 2 four-st'y stores and dwells., 413 Milwaukee Ave.; cost, $20,000; architect, H. Kley.

L. C. Kiniston, three-st'y dwell., 581 Carpenter St.; cost, $8,000; architect, Barfield.

J. Ruelhling, 3 two-st'y dwells., 415 Oak St.; cost, $9,000.

J. Kletscher, three-st'y store and dwell., 1492 Milwaukee Ave.; cost, $7,000; architect, H. Kley.

Santier, Bloom & Booth, 3 two-st'y dwells., 541 to 545 Hurlbut St.; cost, $11,000; architect, M. L. Beers.

H. Schulenberg, basement, 1139 Milwaukee Ave.; cost, $3,000.

A. Prinbz, two-st'y dwell., 597 Eighteenth St.; cost, $3,000.

B. Huehl, two-st'y dwell., 1016 Halsted St., cost, $3,000.

A. Monke, two-st'y store and dwells., 3156 Laurel St.; cost, $4,000; architect, H. Kley.

M. E. Dillie, two-st'y dwell., 293 Leavitt St.; cost, $2,500; architect, T. Karl.

E. E. Russell, two-st'y dwell., 98 Laflin St.; cost, $4,500; architects, Wilson & Moody.

C. L. Henning, three-st'y dwell., 80 Evergreen St.; cost, $4,000; architect, H. Weber.

Turner & Bond, six cottages, South Oakley St.; cost, $9,000.

T. Sabin, two-st'y dwell., Twenty-fourth St.; cost, $2,500.

E. Noa, three-st'y flats, 136 Locust St.; cost, $4,500; architect, H. M. Hansen.

S. Scramboowski, two-st'y store and dwell., 42 Will St.; cost, $5,000; architect, H. Weisner.

B. Van Buren, two-st'y store and dwell., 1249 Madison St.; cost, $3,500; architect, J. McGregor.

P. Schulte, two-st'y dwell., 375 Maxwell St.; cost, $4,000.

L. Plath, three-st'y dwell., 212 East Huron St.; cost, $7,000; architect, J. S. Woollacott.

P. White, three-st'y store and dwell., 145 South Canal St.; cost, $10,000.

J. Devlin, two-st'y dwell., 738 Twelfth St.; cost, $4,000.

N. Thomas, two-st'y dwell., 59 Florimund St.; cost, $4,000.

Bowes & Wells, three cottages, Moore St.; cost, $3,000.

Minneapolis, Minn.

BUILDING PERMITS.—P. G. Lamoreaux, 2 two-and-one-half-st'y wooden dwells., First Ave., bet. East Thirty-third and Thirty-fourth Sts.; cost, $15,000.

D. R. Barber, brick store and flat, Second Ave., s, and Fourth St.; cost, $30,000.

Frank J. Davis, wooden dwell., Grand Ave. and West Twenty-ninth St.; cost, $3,000.

G. Glueck & Sons, two-st'y addition to factory, Marshall St., bet. Twentieth and Twenty-first Aves., n e; cost, $10,000.

First Unitarian Church Society, stone church building, cor. Mary Pl. and Eighth St., s; cost, $25,000.

S. R. Sherburne, two-st'y wooden dwell. and barn, Twelfth St, bet. Chestnut and Linden Aves, n; cost, $7,400.

J. W. Tousley, 2 two-st'y brick veneer dwells., Nicollet Ave., bet. Twenty-sixth and Twenty-seventh Sts.; cost, $9,200.

Edward N. Darrow, two-st'y brick dwell., Harmon Pl., bet. Maple and Hennepin Aves.; cost, $10,000.

Wm. H. Leonard, double two-st'y frame dwell., Eleventh St., bet. Second and Third Aves., s e; cost, $3,500.

Minnesota Linseed Oil Company, brick addition to factory, Tenth Ave., s, bet. Washington Ave. and Third St.; cost, $4,000.

Silver Lake Congregational Church Society, church, brick veneer, cor. Thirty-fourth and North Fremont Aves.; cost, $10,000.

George Sumners, three-st'y brick dwell., cor. Fourth Ave. and Tenth St., s; cost, $20,000.

George Summers, four-st'y brick boarding-house, Fourth and Tenth Aves., s; cost, $12,000.

Heinrich Brewing Company, five-st'y stone brewery, foot of Fourth St., cor. of River St., East division; cost, $50,000.

George H. Hoit, two-st'y wooden dwell., Sixth-and-a-half Ave., bet. East Twentieth and East Twenty-first Sts.; cost, $3,000.

Turnquist, Thompson & Geierhofer, four-st'y brick store building, Washington Ave., bet. First and Second Aves., s; cost, $50,000.

Matt Gross, two-st'y wooden dwell. and barn, Fifth St.; bet. Fifteenth and Sixteenth Aves., n; cost, $2,300.

A. M. Baxter, two-st'y wooden dwell. and barn, Lyndale Ave., bet. Twenty-sixth and Twenty-seventh Sts.; cost, $3,500.

Salisbury, Coots, Rolf & Co., brick warehouse, Main St., bet. Second and Third Aves., s; cost, $3,000.

Minneapolis City, addition to brick school building, Sixth Ave., bet. North Aldrich and North Bryant Aves.; cost, $10,000.

P. G. Lamoreaux, two-st'y wooden dwell., Snelling Ave., bet. East Sixteenth and East Seventeenth Sts.; cost, $4,000.

P. G. Lamoreaux, two-st'y wooden dwell., Snelling Ave., bet. East Thirty-seventh and Thirty-eighth Sts.; cost, $4,000.

P. G. Lamoreaux, two-st'y, wooden dwell., Stevens Avenue, bet. Thirty-third and Thirty-fourth Sts., cost, $7,500.

William Regan, 13 one-and-one-half-st'y brick veneer dwells., Twenty-second-and-one-half Ave., bet. East Twenty and East Twenty-second Sts.; cost, $16,800.

M. W. Glenn, boiler house, Second St., bet. Fifth and Sixth Aves.; cost, $5,000.

Louis Knoblauch, two-st'y wooden dwell. and barn, cor. Maple St. and Hennepin Ave.; cost, $4,300.

A. Rinker, two-st'y wooden dwell., Harmon Pl., bet. Tenth and Eleventh Sts.; cost, $4,000.

Douglas & Manston, double two-st'y brick veneer store and flats, cor. Nineteenth and Washington Ave., n; cost, $8,000.

F. C. Barrows, two-st'y wooden dwell., Third Ave., bet. Fourth and Fifth Sts., s.; cost, $4,000.

Pray Manufacturing Company, three-st'y brick factory, Forty-fourth Ave., s, and First St.; cost, $3,000.

E. B. Wolf & Thomas Owen, three frame dwells., East Twenty-fifth St., bet. Seven-and-a-half and Eighth Aves.; cost, $5,200.

J. A. Amory, dwell. and barn, Oak Grove St. and Spruce Pl.; cost, $5,300.

Fred H. White, two-st'y frame dwell., e s Stevens Ave., bet. East Twentieth and East Twenty-second Sts.; cost, $3,000.

J. Boswell, frame dwell. and barn, Second Ave., bet. East Twenty-eighth and East Twenty-ninth Sts.; cost, $4,200.

J. Anderson, two-st'y brick store, cor. Riverside Ave. and Twenty-fourth St.; cost, $4,000.

Rosa A. Wright, 8 three-st'y brick tenements, cor. Eighth St. and Third Ave., s; cost, $25,000.

Philip Lockwood, brick store, cor. Washington and Twentieth Aves., s; cost, $6,500.

New York.

THE BUILDING LAWS.—It is anticipated that Governor Hill will not sign either of the building laws passed by the two branches of the Legislature, one advocated by the Mechanics' and Traders' Exchange, and the other restricting the height of buildings.

FLATS.—Four five-st'y brick and stone flats are to be built on the s w cor. of Eighth Ave. and One Hundred and Thirtieth St., from designs of Messrs. A. B. Ogden & Son.

HOUSES. — Eight three-st'y and basement brick and terra-cotta front houses are to be built on the n w cor. of Seventy-eighth St. and West End Ave., for Mr. H. Hewitt, at a cost of $80,000, from plans of Mr. F. B. White.

BUILDING PERMITS. — *Cherry St., Nos. 394 and 396*, two-st'y brick office and beer-vaults, tin roof; owner, James Wallace, 68 and 70 Madison St.; architect, Gage Inslee.

Ave. A, e s, 51' 2" n Eighty-first St., 2 five-st'y brick tenements and stores, tin roofs; cost, each, $15,000; owner, Chas. Huber, 155 East Eighty-fifth St.; architect, John Brandt.

Seventy-ninth St., n w cor. Fourth Ave. (fronting on Seventy-ninth St.), 5 four-st'y brown-stone front dwells., tin roofs; cost, each, $20,000; owners, McDonnell & Casey, 172 East Eighty-eighth St.; architects, Thom & Wilson.

Sixty-seventh St., s s, 350' w Eighth Ave., 3 five-st'y brick tenements, tin roofs; cost, each, $17,500; owner and architects, same as last.

Eighty-fourth St., s s, 100' e Third Ave., 2 five-st'y brown-stone flats and stores, tin roofs; cost, each, $22,000; owner, Thomas Moloney, 342 East Sixty-second St.; architects, Thom & Wilson.

Lexington Ave., n e cor. Ninetieth St., four-st'y brick tenement and store, tin roof; cost, $18,000; owner, Theo. A. Cordier, 401 East Eighty-seventh St.; architect, John Brandt.

Third Ave., Nos. 1872 and 1874, 2 five-st'y brick tenements and stores, tin roofs; cost, total, $34,000; owner and builder, John D. Karst, Jr., 2006 Second Ave.; architect, Richard Berger.

Eighty-first St., s w cor. Lexington Ave., 2 six-st'y brick and stone flats, tin roofs; cost, total, $150,000; owner, Frederick Correll, 112 East Eighty-second St.; architect, Fred. T. Camp.

West Sixty-second St., No. 451, five-st'y brick tenement, tin roof; cost, $17,500; owner, Regina Cook, 453 East Sixty-second St.; architects, Thom & Wilson.

Sixty-sixth St., n s, 375' 1" w Eighth Ave., 2 five-st'y brick tenements, tin roofs; cost, each, $17,500; owner, John M. Ruck, 910 Ninth Ave.; architects, Thom & Wilson.

Fourth Ave., w s, 80' n Seventy-ninth St., four-st'y brick dwell., tin roof; cost, $18,000; owners, etc., same at last.

Seventy-first St., n s, 327' 9" w Grand Boulevard, 7 three-st'y brown-stone front dwells., tin roofs; cost, each, $12,000; owner, Elizabeth Steinmetz, 531 West Seventy-first St.; architect, J. H. Steinmetz.

Seventy-sixth St., n s, 350' w Ninth Ave., 4 four-st'y brown-stone front dwells., tin roofs; cost, each, $20,000; owner, Wm. Noble, Fifty-seventh St. and Seventh Ave.; architect, Wm. Baker.

Eighty-seventh St., n s, 75' w Ninth Ave., 3 three-st'y brown-stone front dwells., tin roofs; cost, each, $9,500; owner, architect and builder, I. M. Grenell, 1764 Broadway.

Seventy-first St., n s, 450' w Eighth Ave., 3 four-st'y brick dwells., tin roofs; cost, each, $10,000; owners and builders, Thompson & Mickens, 753 Seventh Ave.; architect, J. E. Terhune.

Seventy-sixth St., n s, 325′ w Ninth Ave., 7 four-st'y brown-stone front dwells., tin roofs; cost, each, $18,000; owner, Margaret A. Brennan, 73 West Sixty-ninth St., architects, Thom & Wilson; builder, not selected.

Seventy-eighth St., s s, 155′ w Ninth Ave., three-st'y brick and stone dwell.. tin roof; cost, $20,000; owner, Henry Maibrunn, 72 Greenwich St.; architects, Alf. Zucker & Co.; builders, Alex. Brown, Jr., and T. J. Duffy.

One Hundred and Twenty-first St., s s, 125′ w Seventh Ave., 8 four-st'y brown-stone front dwells., tin roofs; cost, days' work; owner, Sarah Darragh, 23 West One Hundred and Twenty-third St.; builder, John E. Darragh.

Sixth Ave., n e cor. One Hundred and Twenty-third St., 8 three-st'y brown-stone front dwells., tin roofs; cost, $15,000; owner, A. B. Vandusen, 2039 Sixth Ave.; architect, Chas. H. Beer.

St. Nicholas Ave., e s, 508′ s One Hundred and Forty-fifth St., 4 three-st'y brick dwells., shingle roofs; cost, each, $4,000; owner, Wm. Thompson, 53 Leonard St.; architect, T. M. Clark; builders, Wm. G. Slade and A. C. Hoe & Co.

One Hundred and Forty-sixth St., s s, 100′ e Tenth Ave., 3 three-st'y brick and frame dwells., shingle and tin roofs; cost, each, $5,000; owner, N. Hobart, 53 Leonard St.; architect and builder, same as last.

Tenth Ave., n w cor. One Hundred and Forty-sixth St., 5 three-st'y brick and frame dwel's., shingle and tin roofs; cost, each, $5,000; owner, Wm. Thompson; architect, T. M. Clark; builders, Wm. G. Slade and A. C. Hoe & Co.

St. Nicholas Ave., n w cor. One Hundred and Forty-sixth St., three-st'y brick dwell., shingle roof; cost, $16,000; owner and architect, same as last; mason, not selected; contractor, A. C. Hoe & Co.

St. Nicholas Ave., w s, 75′ n One Hundred and Forty-sixth St., 2 three-st'y and basement brick dwells., shingle and tin roofs; cost, each, $8,000; owner and architect, same as last.

St. Nicholas Ave., w s, 25′ s One Hundred and Forty-seventh St., 2 three-st'y brick and frame dwells., shingle and tin roofs; cost, each, $8,000; owner, same as last; architect, E. A. Sargent.

One Hundred and Fifty-first St., s s, 125′ e Boulevard, three-st'y frame tenement, tin roof; cost, $5,000; owner, A. Abel, Tenth Ave., cor. One Hundred and Fiftieth St.; architect, Wm. Simpson.

One Hundred and Forty-sixth St., n s, 125′ w St. Nicholas Ave., 4 three-st'y frame dwells., shingle and tin roofs; cost, each, $5,000; owner, William Thompson, 53 Leonard St.; architect, Carl Pfeiffer.

One Hundred and Forty-sixth St., n s, 325′ w St. Nicholas Ave., 2 three-st'y frame dwells., shingle and tin roofs; cost, each, $5,000; owner, Wm. A. Hoe, 10 Liberty Pl.; architect, Carl Pfeiffer.

Division St., Nos. 37 and 37½, five-st'y brown-stone tenement, tin roof; cost, $15,000; owner, Frederick Finck, 196 Eldridge St.; architect, Julius Kastner.

Greene St., No. 163, 125′ 3″ n Houston St., seven-st'y brick, stone and iron warehouse, tin roof; cost, $35,000; owner, Theodore Cohnfeld, 83 Greene St.; architects, Alfred Zucker & Co.

Hudson St., n e cor. Spring St., seven-st'y brick and Belleville stone warehouse, tin and slate roof; owner, Trinity Church, by S. V. R. Cruger, 112 East Thirty-fifth St.; architect, C. C. Haigbt.

Monroe St., No. 87, four-st'y brick tenement, tin roof; cost, $12,000; owner, John Early, 513 Park Ave., Brooklyn; architect, Wm. Graul.

Mulberry St., Nos. 234 *to* 238, 3 five-st'y brick tenements, tin roofs; cost, $18,000; owners, Garret L. and Walter G. Schuyler, 133 East Sixtieth St. and 12 West Sixty-first St.; architect, Jobst Hoffmann.

Pell St., No. 11, 125′ w Bowery, five-st'y brick tenement, tin roof; cost, $10,000; owner, Laura Conkling, by F. A. Conkling, 27 East Tenth St.; builder, A. J. Horgan.

Washington St., s e cor. Thirteenth St., five-st'y brick tenement, tin roof; cost, $20,000; owner, Geo. B. Deane, 277 West Eleventh St.; architect, J. W. Walter.

Water St., Nos. 283 *and* 285, two-st'y brick machine-shop, gravel roof; cost, $4,000; owner, Eliza A. Carrell, 82 Vernon Ave., Brooklyn; architect, Andrew Craig.

Second St., No. 242, five-st'y store and tenement, tin roof; cost, $17,000; owner, Michael Fay, 416 East One Hundred and Twentieth St.; architects, A. B. Ogden & Son.

East Thirteenth St., No. 56, four-st'y iron and brick warehouse, tin roof; cost, $14,000; owner, H. Edna V. Miner, 10 East Forty-first St.; architect, E. Smith.

Broome St., s w cor. Chrystie St., five-st'y brick store and tenement, tin roof; cost, $10,000; owner, Rudolph Laig, 238 East Broadway; architect, J. Boekell.

Goerck St., No. 41, five-st'y brick stores and tenement, tin roof; cost, $9,000; owner, Isaac J. Mckabe; architects, A. B. Ogden & Son.

Greenwich St., No. 300, five-st'y store, tin roof; cost, $12,000; owner, Julia Rhinelander, by L. Stewart, 20 Washington St.; architect, H. J. Hardenbergh; builders, H. Smith & Son.

West Forty-eighth St., No. 415, five-st'y brick tenement, tin roof; cost, $15,000; owner, Marion Fyfe, on premises; architect, John Sexton.

West Fifty-second St., No. 414, s s, 175′ w Ninth Ave., five-st'y Connecticut brown-stone tenement, tin roof; owner, Stephen H. Mapes, 333 West Fiftieth St.; architect, C. Abbott French.

West Fifty-fourth St., Nos. 119 *and* 121, 2 three-st'y brick and granite stables, tin roofs; cost, each, $10,000; owner, Wm. B. Baldwin, 123 West Fifty-fourth St.; architect, G. B. Pelham; builders, D. T. Kennedy and C. Fulton.

West Fifty-seventh St., No. 23, n s, 400′ w Fifth Ave., four-st'y brick and Belleville stone dwell., tin roof; owner, William H. DeForest, 12 West Fifty-seventh St.; architects and builders, Charles Graham & Sons.

Fifty-eighth St., No. 353, n s, about 125′ e Ninth Ave., five-st'y brown-stone tenement, tin roof; cost, $25,000; owner, Amelia A. Gleason, 243 West Forty-eighth St.; architect, J. E. Terhune.

Sixth Ave., e s, 28′ n Twenty-second St., five-st'y brick and terra-cotta restaurant and tenement, tin roof; cost, $17,800; owner, John O'Neill, n e cor. Sixth Ave. and Twenty-second St.; architect, John G. Prague.

Ninth Ave., s w cor. Fiftieth St., five-st'y brick store and tenement, tin roof; cost, $35,600; owner, Elsworth L. Striker, 404 West Seventieth St.; architects, A. B. Ogden & Son.

West Sixteenth St., No. 327, six-st'y brick factory, tin roof; cost, $12,500; owner, George Hunzinger, 257 West Twentieth St.; architects, A. Pfund & Sons.

Twenty-seventh St., No. 324, five-st'y brick tenement, tin roof; cost, $20,000; owner, Christiana R. Kehoe, 57 East One Hundred and Twenty-first St.; architect, A. Kehoe; builder, J. Askey.

Thirtieth St., n s, 100′ e Tenth Ave., 3 five-st'y Connecticut brown-stone tenements, tin roofs; cost, each, $15,000; owner, Margaret A. Brennan, 73 West Sixtieth St.; architects, Thom & Wilson.

West Forty-second St., No. 308, five-st'y brick tenement, tin roof; cost, $22,000; owner, Carl L. Childs, 327 West Forty-second St.; architects, Thom & Wilson.

East Forty-eighth St., Nos. 143 *and* 145, 2 five-st'y brick and brown-stone tenements, tin roofs; cost, $13,000 and $25,000; owner and builder, John J. Brierly, 113 East Forty-eighth St.

East Fifty-third St., No. 353, five-st'y brick tenement, tin roof; cost, $14,000; owner, Jno. N. A. Griswold, 71 South St.; architects, A. B. Ogden & Son.

Eighth Ave., No. 577, four-st'y brick tenement, tin roof; cost, $5,000; owner, Rose Rosenblatt, 325 East Fifty-seventh St.; architect, M. C. Merritt.

Eighth Ave., s e cor. Fifty-fifth St., 2 five-st'y brick stone-trimmed tenements, tin roofs; cost, each, $30,000; owner, Edward V. Loew, 25 West Fifty-seventh St.; architects, Thom & Wilson; builders, Dawson & Archer and C. W. Klappert's Sons.

East Sixty-ninth St., No. 19, four-st'y basement brick and brown-stone dwell., tin and slate roof; cost, $40,000; owner, Wm. C. Lane, 500 Madison Ave.; architects and builders, Chas. Buek & Co.

Madison Ave., No. 831, between Sixty-ninth and Seventieth Sts., four-st'y basement brick and brown-stone dwell., tin and slate roof; cost, $74,000; owners, architects and builders, Charles Buek & Co., 500 Madison Ave.

Madison Ave., No. 833, between Sixty-ninth and Seventieth Sts., four-st'y brick and brown-stone dwell., tin roof; cost, $32,000; owner, George G. Moore, 151 East Thirty-fourth St.; architects and builders, same as last.

Madison Ave., w s, between Eighty-fifth and Eighty-sixth Sts., three-st'y brick depot, gravel roof; cost, $65,000; owner, N. Y. & Harlem R. R.; architect, S. B. Snook.

Ninetieth St., n s, about 150′ w Second Ave., two-st'y brick shop, gravel roof; cost, $4,000; owner, Jacob Miller, 1616 Third Ave.; architect, C. Kinkel.

Eighty-ninth St., s s, 61′ w Lexington Ave., five-st'y brown-stone tenement, tin roof; cost, $24,000; owner, John McQuade, 132 Lexington Ave.; architect, J. C. Burne.

One Hundred and Eighteenth St., foot of, at Harlem River, one-st'y brick annealing-house, iron roof; cost, $12,000; owner, The R. H. Wolff Co. (Limited), 166 East Seventy-fourth St.; architects, Schwarzmann & Buchman; builders, List & Lennon.

Madison Ave., s e cor. Seventy-second St., 7 brick and brown-stone dwells., tin roofs; cost, total, $135,000; owners, architects and builders, Charles Graham & Sons.

Third Ave., w s, 50′ 5′ n One Hundred and Fifth St., five-st'y brick store and tenement, tin roof; cost, $20,000; owner, Thomas Gearty, 135 East Eighty-third St.; architect, J. C. Burne.

Third Ave., w s, 75′ 5″ n One Hundred and Fifth St., five-st'y brick store and tenement, tin roof; cost, $20,000; owner and architect, same as last.

Sixty-ninth St., n s, 350′ w Ninth Ave., 3 four-st'y brown-stone dwells., tin roofs, terra-cotta copings; cost, each, $16,000; owner, R. W. Myers, 131 East Sixty-third St.; architect, W. Baker; builder, not selected.

Eleventh Ave., No. 866, e s, 50′ s Sixtieth St., five-st'y brick tenement, tin roof; owner, Julia Mullally, 511 West Sixtieth St.; architect, A. E. Hudson.

Ninety-fifth St., s s, 151′ e Tenth Ave., 5 three-st'y brick dwells., tin roofs; cost, each, $10,000; owner, architect and builder, Wm. J. Merritt, 152 West One Hundred and Twenty-seventh St.

One Hundred and Fourth St., n s, 216′ 8″ e Ninth Ave., 2 four-st'y brick and Dorchester stone dwells., tin roof.; cost, $11,500; owner, Isaac A. Laurence, on premises; architect, R. S. Townsend.

Eleventh Ave., n e cor. Eighty-fourth St., 6 three-st'y brick dwells., tin roofs; cost, $11,000 and $15,000; owner, George W. Rogers, 104 East One Hundred and Twenty-fourth St.; architects, Cleverdon & Putzel.

One Hundred and Nineteenth St., s s, 85′ e Sixth Ave., 6 three-st'y Connecticut brown-stone dwells., tin roofs; cost, total, $66,000; owner, William F. McEntee, 224 East One Hundred and Fifth St.; architect, Andrew Spence.

One Hundred and Sixty-fifth St., n s, 200′ e Tenth Ave., three-st'y frame tenement, tin roof; cost, $4,500; owner, Michael Kennedy; architect, Henry Fouchaux.

Fifth Ave., No. 2064, w s, 50′ n One Hundred and Twenty-seventh St., four-st'y Belleville stone, brick and terra-cotta dwell.; cost, $30,000; owner, F. B. Sewell and Mrs. M. J. Perkins, 121 East Seventy-eighth St.; architect, Wm. H. Beers.

Seventh Ave., n e cor. One Hundred and Twenty-seventh St., 3 five-st'y brown-stone tenements, tin roofs; cost, one $20,000, and two $40,000 each; owner, Henry Bornkamp, 306 West One Hundred and Twenty-seventh St.; architects, A. B. Ogden & Son.

One Hundred and Forty-third St., s s, 100′ e Willis Ave., three-st'y brick tenement, tin roof; cost, $7,000; owner, Patrick Keenan, 247 First Ave.; architect, E. Gandolfo.

Walton Ave., w s, s of One Hundred and Fiftieth St., two-st'y frame dwell., tin roof; cost, $3,000; owner, Chas. McEwen, on premises; architect, F. S. Barus; builder, not selected.

One Hundred and Fifty-third St., s s, 175′ w Third Ave., three-st'y frame tenement, tin roof; cost, $6,000; owner, Georg Schneider, One Hundred and Fifty-third St., near Third Ave.; architect, A. Pfeiffer.

Walton St., e s, about 350′ n One Hundred and Fiftieth St., two-and-a-half-st'y brick dwell., slate and tin roof; cost, $5,000; owner, Annah B. Hayes, 1175 Herkimer St., Brooklyn; builder, J. Gorden.

Canal St., No. 40, five-st'y brick tenement and store, tin roof; cost, $10,000; owner, Henry Klingenstein, 312 Grand St.; architect, E. W. Greis.

West Houston St., No. 26, five-st'y brick store, tin roof; cost, $30,000; owner, L. Sachs & Bro., 433 Broome St.; architect, Richard Berger.

Perry St., No. 48, five-st'y brown-stone front tenement, tin roof; cost, $18,000; owner, Anna J. Bennet, 150 Broadway; architects, A. B. Ogden & Son.

Hudson St., Nos. 601 *and* 603, five-st'y brick flat, tin roof; cost, $26,000; owner, Wm. Gibson, 330 West Twelfth St.; architect, James I. Lyons; builders, S. F. Coddington and John C. Wessels.

Stanton St., No. 237, five-st'y brick tenement, tin roof; cost, $15,000; owner, Frank A. Seitz, 315 East Forty-second St.; architect, Wm. Graul.

Ave. A, w s, 100′ s Fifty-seventh St., two-st'y brick stable, tin roof; cost, $7,000; owners, Schmitt & Schwanenfluegel, 163 East Fifty-ninth St.; architects, A. Pfund & Son.

West Eighteenth St., No. 434, five-st'y brick tenement, tin roof; cost, $17,000; owner, Louis Dreyer, 339 West Eighteenth St.; architect, Chas. Rentz.

East Thirty-fifth St., No. 324, five-st'y brick tenement, tin roof; cost, $16,000; owner, Mary Ann Peterson, Brooklyn; architect, James Kyle.

West Forty-sixth St., No. 528, five-st'y brick tenement, tin roof; cost, $12,000; owner, Mrs. Sarah McDonald, on premises; architect, J. M. Forster.

Ninth Ave., No. 454, five-st'y brick tenement and store, tin roof; cost, $17,000; owner, Caroline Moench, 328 East Sixty-ninth St.; architect, J. Kastner.

West Fiftieth St., No. 402, four-st'y brick dwell. and store, tin roof; cost, $5,000; owner, George Beitweisner, 402 West Fiftieth St.; architect, Joseph Wolf.

West Forty-sixth St., Nos. 530 *and* 532, 2 five-st'y brick tenements, tin roofs; cost, each, $24,000; owner, Mrs. Margaret Costello, 532 West Forty-sixth St.; architect, John M. Forster.

First Ave., No. 974, five-st'y brick tenement, tin roof; cost, $10,000; owner, John A. Hoffsass, 967 First Ave.; architect, Adam Weber.

Seventy-sixth St., s s, 175′ w Second Ave., five-st'y brick tenement, tin roof; cost, $18,000; owner, Annie E. Kelly, 434 East Seventy-fifth St.; architect, G. A. Schellenger.

Ave. A, s e cor. Eighty-fifth St., 2 five-st'y brown-stone front tenements and stores, tin roofs; cost, $18,000 and $22,000; owner, Frederick Schuck, n w cor. Ave. A and Eighty-fifth St.; architect, John Brandt.

Sixty-ninth St., n s, 200′ e Madison Ave., four-st'y brick dwell., brick and tile roof; cost, $35,000; owner, Chas. E. Butler, Buckingham Hotel; architect, Stephen D. Hatch; builders, Robert L. Darragh & Co.

Madison Ave., n s cor. Ninety-first St., front on Ave., 6 three-st'y brick dwells., tin roofs; cost, each, $10,000; owner, Alen D. Duff, 321 East Eighty-sixth St.; architect, Fred. T. Camp.

One Hundred and Twenty-second St., n s, 136′ e Third Ave., five-st'y brick tenement, tin roof; cost, $13,500; owner, Elise Thau, 211 East One Hundred and Twenty-second St.; architect and mason, Louis Ungrich; builder, days' work.

Ninth Ave., s e cor. Sixty-second St., five-st'y brick flat and store, tin roof; cost, $35,000; owner, Peter Wagner, 448 West Forty-seventh St., and John M. Ruck, 359 West Fifty-eighth St.; architect, C. F. Ridder, Jr.; builder, not selected.

Ninety-fourth St., n s, 225′ w Eighth Ave., 3 three-st'y brick dwells., tin roofs; cost, each, $20,000; owner, Thomas Auld, 232 West Fifty-fifth St.; architect, G. A. Schellenger.

Eighth St., s e cor. One Hundred and Twenty-second St., five-st'y brick tenement and store, tin roof; cost, $25,000; owner, Lorenz Weiher, New Rochelle, N. Y.; architect, John Brandt.

Eighth Ave., e s, 25′ s One Hundred and Twenty-second St., 5 five-st'y brick tenements and stores, tin roofs; cost, each, $15,000; owner and architect, same as last.

St. Nicholas Ave., n e cor. One Hundred and Twenty-first St., 2 five-st'y brick tenements and stores, tin roofs; cost, each, $15,000 and $18,000; owner, Patrick J. O'Brien, One Hundred and Forty-third St., near Eighth Ave.; architect and builder, Garrett Van Cleive.

Bloomingdale Road, n e cor. One Hundred and Forty-first St., three-st'y frame dwell., shingle roof; cost, $6,000; owner, Annie E. Brown, One Hundred and Fifty-second St. and Eleventh Ave.; architect, W. H. Berrian.

Fifth Ave., n e cor. One Hundred and Twenty-eighth St., 6 three-st'y brown-stone front dwells., tin roofs; cost, each, $15,000; owner, Isaac E. Wright, 1983 Madison Ave.; architects, Cleverdon & Putzel.

Fifth Ave., s w cor. One Hundred and Thirty-second St., 10 four-st'y brown-stone front dwells., tin roofs; cost, each, $17,000; owner, Jas. Fettretch, 960 Park Ave.; architects, Cleverdon & Putzel.

St. Nicholas Ave., e s, 340′ n One Hundred and Forty-first St., 2 three-st'y frame dwells., tin roofs; cost, each, $3,500; owner, architect and builder, same as last.

Eighth Ave., e s, 25′ n One Hundred and Forty-first St., two-st'y frame stable, tin roof; cost, $200; owner, John W. Guigan, on premises; architect and builder, same as last.

St. Nicholas Ave., w s, 24′ 11″ n One Hundred and Forty-seventh St., 2 two-and-mansard-st'y brick dwells., shingle, slate and tin roofs; cost, each, $7,000; owner, Mrs. Frank Leslie, Victoria Hotel; architect, E. A. Sargent.

St. Nicholas Ave., w s, 74′ 11″ s One Hundred and Forty-eighth St., 2 two-and-mansard-st'y brick dwells., shingle, slate and tin roofs; cost, each, $7,000; owner, Richard P. Messiter; architect, E. A. Sargent.

Ogden Ave., s s, 200′ w Devoe St., 4 two-st'y and attic frame dwells., shingle roofs; cost, each, $5,000; owner, D. A. McLeod, 29 Bridge St.; architect, Alfred E. Barlow; builders, Jacob V. Myers and D. McLeod & Son.

Washington Ave., Nos. 1815 and 1817, one-st'y frame church, shingle roof; cost, $4,500; owner, Trustees Tremont Baptist Church, H. C. Mandeville, pastor, 1760 Washington Ave.; architect, Frank F. Ward.

Greenwich St., No. 302, five-st'y, one-st'y iron, upper st'y brick, store, tin roof; cost, $12,000; Mrs. Mary C. King, 226 Greenwich St.; architects and builders, Havilah M. Smith & Son.

Harrison St., No. 18, five-st'y brick store, tin roof; cost, $12,000; Jeremiah W. Dimick, 31 Madison Ave.; architect, D. Lienau; builder, L. N. Williams.

Hudson St., No. 641, five-st'y brick tenement, tin roof; cost, $20,000; Michael Maloughney, n e cor. Little Twelfth St. and Ninth Ave.; architect, Jas. Stroud.

Forty-first St., n s, 145′ w First Ave., 4 five-st'y brick and brown-stone tenements, tin roofs; cost, each, $22,000; Marie S. Johnson, 464 West Sixty-Fourth Sts.; architects, A. B. Ogden & Sons.

Forty-second St., s s, 113′ w First Ave.; 3 five-st'y brick and brown-stone tenements, tin roofs; cost, each, $22,000; Peter N. Ramsey, 1675 Broadway; architects, A. B. Ogden & Son.

Ninth Ave., e s, 75′ s Forty-seventh St., five-st'y brick store and tenement, tin roof; cost, $18,000; Francis Woodruff, 676 Ninth Ave.; architect, Geo. B. Pelham.

Ninth Ave., n w cor. Forty-eighth St., five-st'y brick tenement, tin roof; cost, $25,000; Patrick McEntegart, 829 Tedth Ave.; architect, James W. Cole; builder, John Jordan.

Broadway, No. 1722, three-st'y brick factory, gravel

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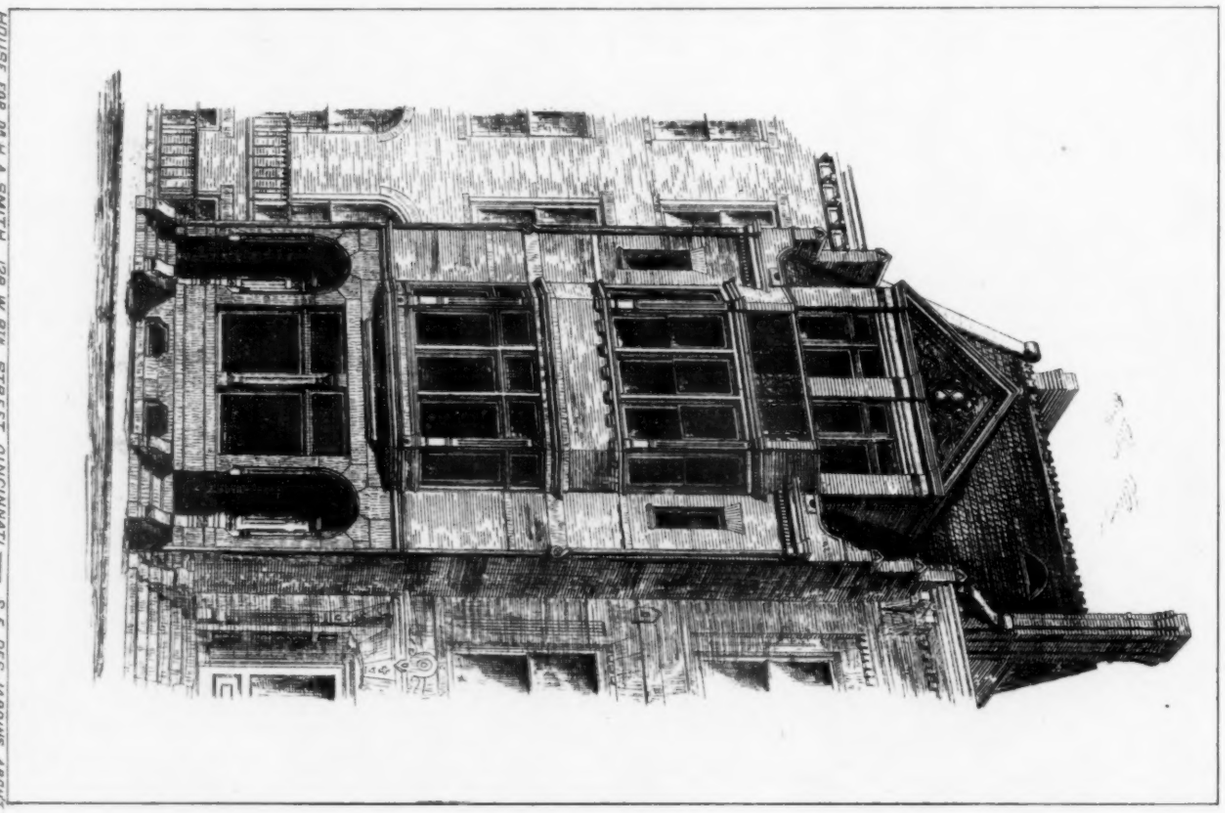
An Old Clock in the offices of Russell & Hawkesworth Architects Worcester Mass



HOUSE FOR DR H.A. SMITH 128 W. 8TH STREET CINCINNATI — S.E. DES JARDINS, ARCHT.

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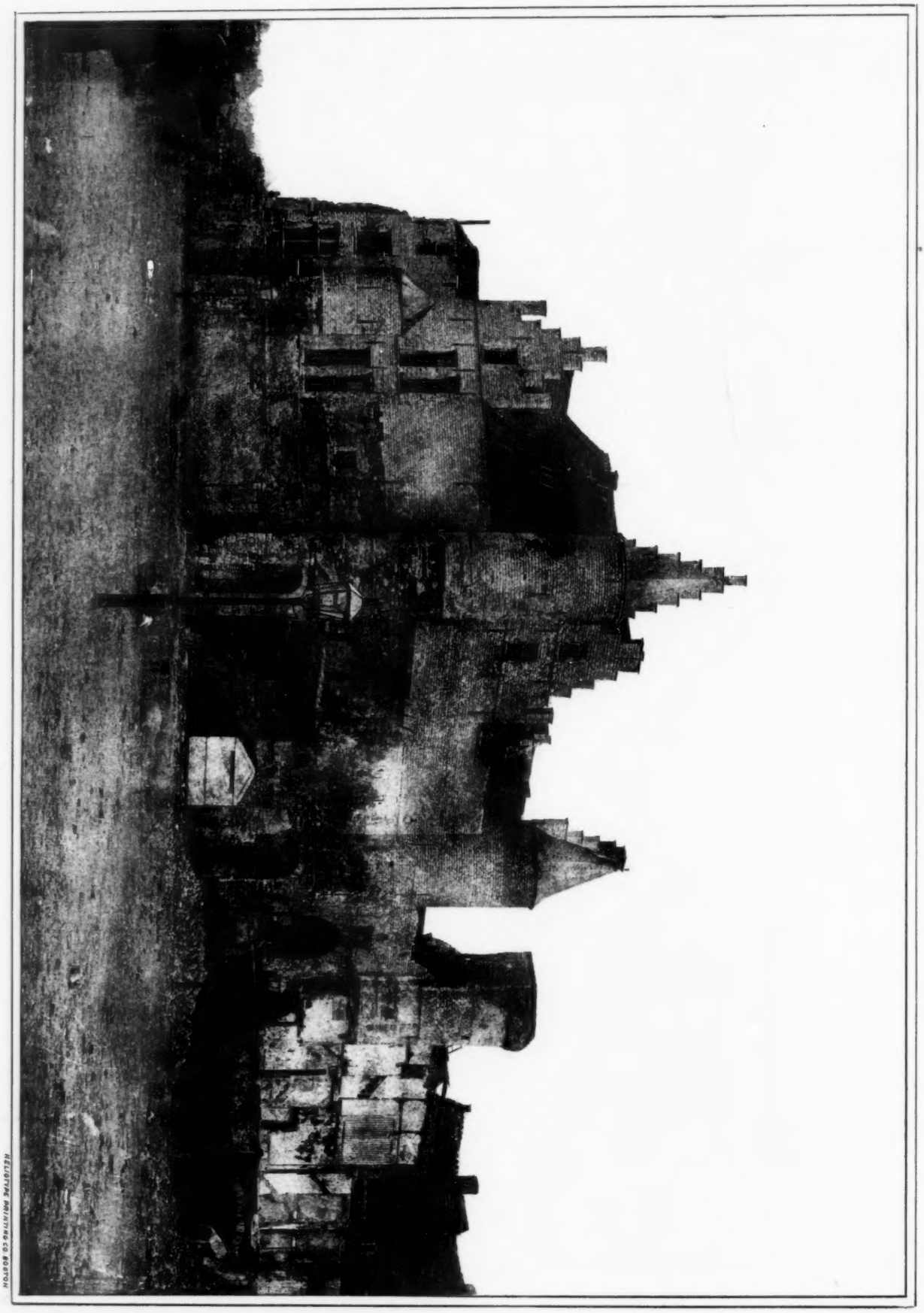

Museum of Antiquities, Antwerp, Belgium. – 1884.

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American Architect and Building News, June 6 1885 No. 493

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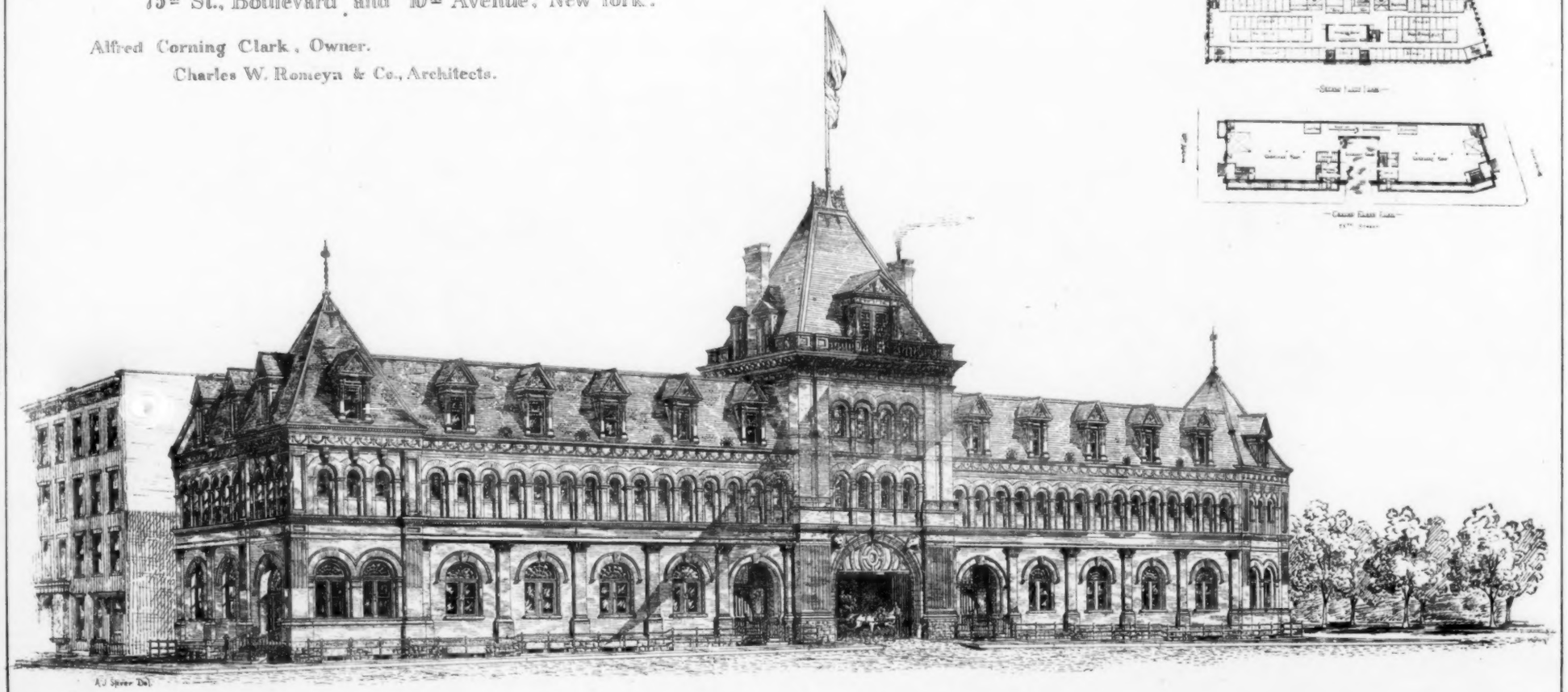
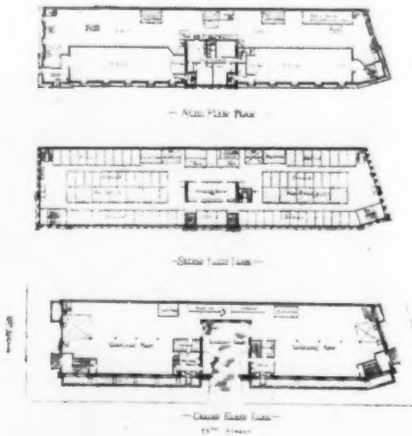
The "Dakota" Stable,

75th St., Boulevard and 10th Avenue, New York.

Alfred Corning Clark, Owner.

Charles W. Romeyn & Co., Architects.





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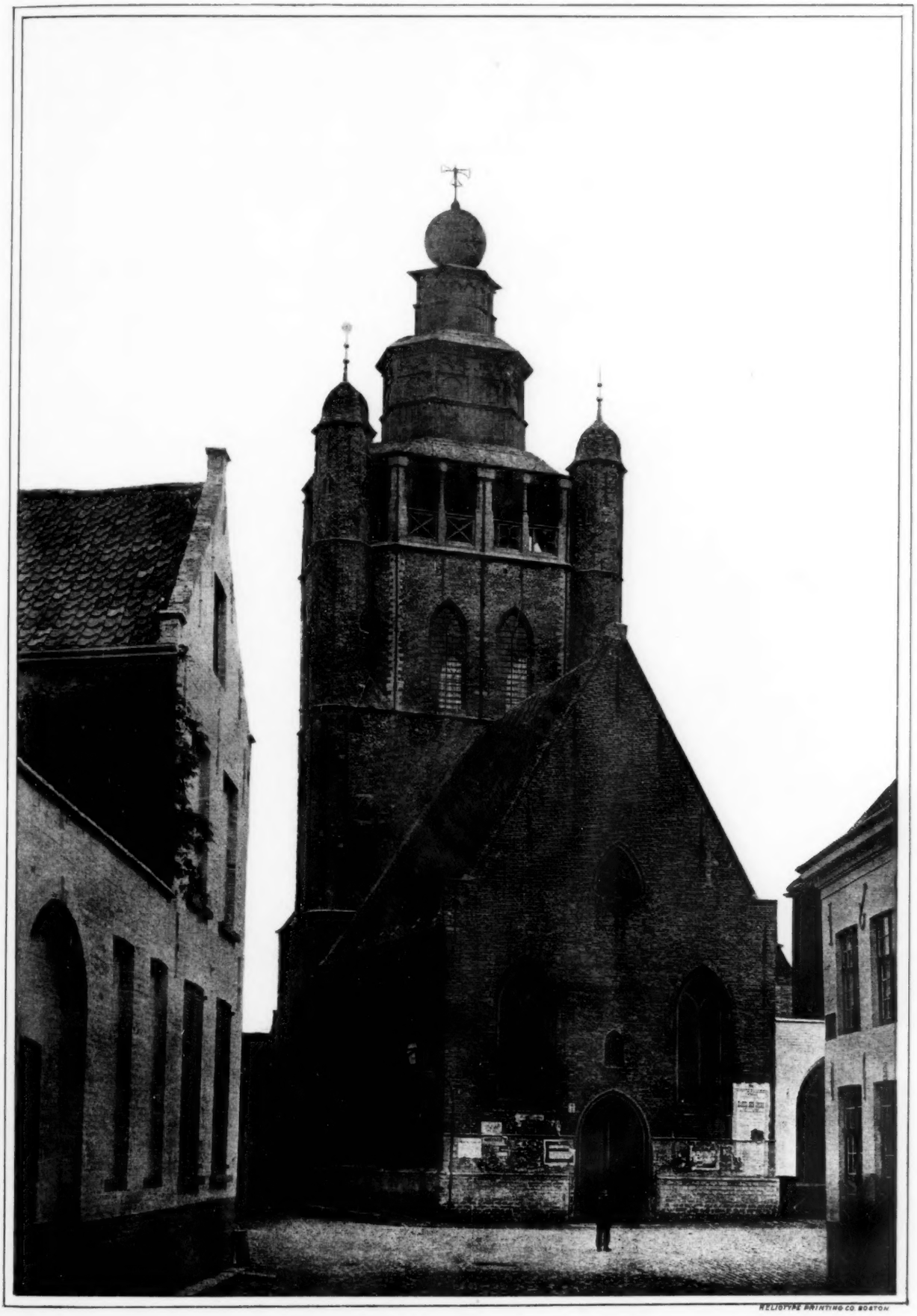

HELIOTYPE PRINTING CO. BOSTON.

TEMPLE DE JERUSALEM, BRUGES, BELGIUM. — 1884.

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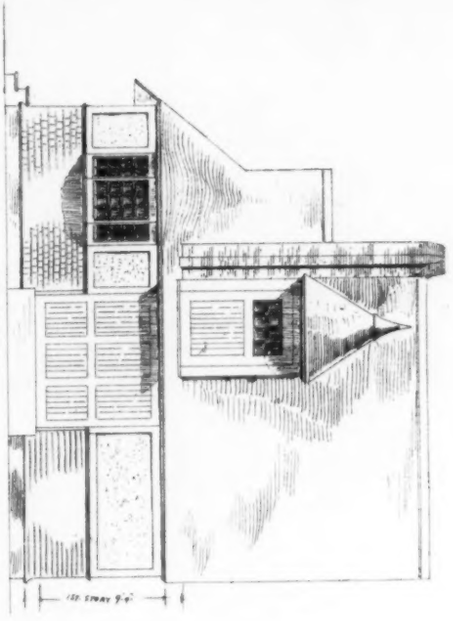
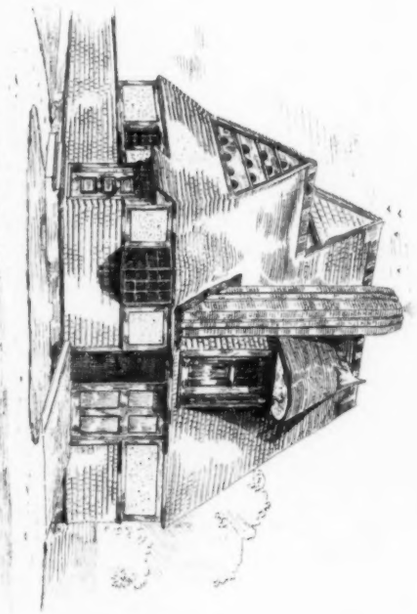
PLAN ELEVATIONS AND PERSPECTIVE OF FRAME STABLE.

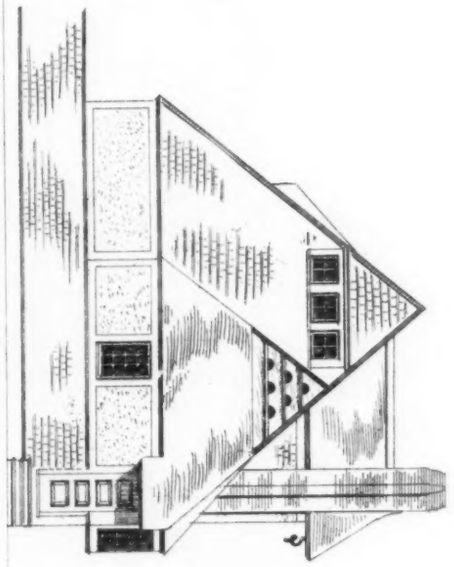
MUCH IN LITTLE SPACE.

GROUND PLAN.

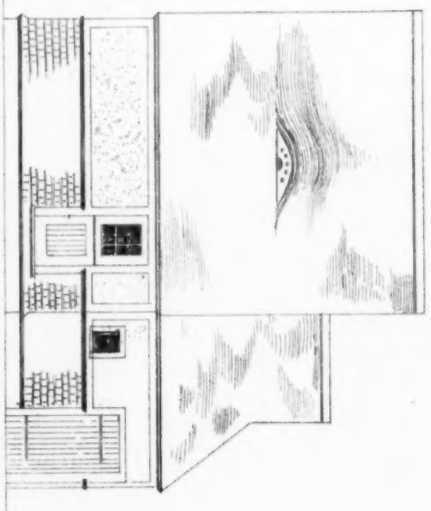


MAIN ELEVATION.

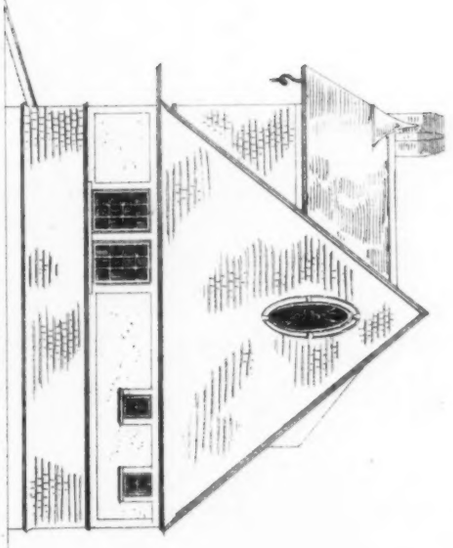




SIDE ELEVATION.



REAR ELEVATION.



SIDE ELEVATION.

HELIOTYPE PRINTING CO BOSTON.

and asphalt roof; cost, $3,000; Silas C. Judd, 317 West Fifty-fourth St.; architect, M. Louis Ungrich; builder, James T. Stevenson.

Eighty-ninth St., s s, 62′ w First Ave., 5 five-st'y brick tenements, and one-st'y brick store, tin roofs; cost, $1,000, $9,000 and $14,000; Emeline and Elizabeth Johnston; architects, A. B. Ogden & Son.

First Ave., s e cor. Seventy-eighth St, five-st'y brick store and tenement, tin roof; cost, $18,500; Mrs. E. Degnan, 161′ w Thirty-third St.; architect, T. Hayes; builder, M. S. Newman.

Philadelphia.

BUILDING PERMITS.—*Belgrade St.*, cor. York St., 8 two-st'y dwells., 14′ x 36′; C. A. Snyder, owner.

Chestnut St., Nos. 117 *and* 119, 2 five-st'y additions, 20′ x 72′; C. P. Westerhold, contractor.

North Third St., No. 1703, two-st'y addition, 22′ x 69′; Jno. Cairns, contractor.

South Tenth St., No 214, three-st'y addition 18′ x 50′; J. Gillmore, owner.

Fourth St., above York St., 5 two-st'y dwells., 15′ x 38′; George Kressler, contractor.

Fourth St., above York St., 6 two-st'y dwells., 12′ x 26′; Geo. Kressler, contractor.

Thirteenth St., cor. Moore St., 46 three-st'y dwells., 15′ x 45′; P. Conway, owner.

Tenth St., above Ternan St., 2 three-st'y dwells., 17′ x 60′; Owen Morris, owner.

Broad St., above Morris St., 13 three-st'y dwells., 17′ x 87′; C. C. Moore, contractor.

Shackamaxon St., No. 1205, three-st'y dwell., 16′ x 39′; J. E. Hershel, owner.

Broad St., above Cherry St., six-st'y factory, 100′ x 140′; C. C. Carman, contractor.

Mawheimer St., below Morris St., three-st'y dwell., 50′ x 52′; W. R. Dougherty, contractor.

Mawheimer St., below Morris St., two-st'y stable, 36′ x 40′; W. R. Dougherty, contractor.

Melrose St., below Bridge St., 2 two-st'y dwells., 16′ x 30′; J. P. Yerkes.

Woodstock St., s of Dickinson St., 11 two-st'y dwells., 15′ x 30′; W. Ferbes, owner.

Reybold St., s of Jackson St., 18 two-st'y dwells., 15′ x 30′; A. M. Greene & Co., owners.

Palethorp St., No. 2202, three-st'y store and dwell., 18′ x 33′; Chas. Bendel, contractor.

Federal St., below Broad St., 2 three-st'y dwells., 18′ x 60′; Jno. Gibson, contractor.

Vine St., No. 1618, three-st'y addition, 14′ x 40′; Richardson & Shourds, contractors.

Thirty-seventh St., cor. Spruce St., grand stand, 20′ x 100′; Tout & McLoughlin, contractors.

Park St., w of Twenty-seventh St., two-st'y stable, 30′ x 32′; Samuel J. Glenn, contractor.

Twentieth St., below Ellsworth St., two-st'y stable, 17′ x 36′; Samuel J. Glenn, contractor.

Morton St., above Upsal St., 4 three-st'y dwells. 23′ x 51′; Thos. W. Wright & Son, contractors.

Seventh St., s of Jackson St., 7 two-st'y dwells., 15′ x 48′; Wm. F. Allbracht, owner.

Daley St., w of Seventh St., 18 two-st'y dwells., 14′ x 28′; Wm. F. Allbracht, owner.

South Twenty-fourth St., No. 214, one-st'y warehouse, 25′ x 77′; Samuel Rain, contractor.

Park Ave., s of Berks St., 10 three-st'y dwells., 19′ x 74′; Samuel Rain, contractor.

Oakford St., w of Twenty-second St., 13 two-st'y dwells., 15′ x 38′; H. R. Coulomb, contractor.

Lancaster Ave., w of Thirty-seventh St., one-st'y store, 36′ x 44′; H. Graus, contractor.

Charles St., above Warren St., 5 two-st'y dwells., 13′ x 25′; Thos. Badman, owner.

Filbert St., w of Thirty-seventh St., two-st'y dwell., 16′ x 49′; L. Goodman, contractor.

Thirty-fourth St., n of Race St., 2 three-st'y brick buildings, 14′ x 16′; J. & L. Pennock, contractors.

Delaware Ave., cor. Noble St., two-st'y ice-house, 80′ x 120′; owner, Knickerbocker Ice Co.

Fairhill St., above Somersett St., 3 two-st'y dwells., 12′ x 40′; L. M. Kenso, contractor.

East Dauphin St., No. 2047, three-st'y dwell., 18′ x 43′; A. Shnepp.

Broad St., above Wharton St., three-st'y dwell., 18′ x 68′; W. Thompson, contractor.

Midvale Ave., cor. Cottage Ave., 12 two-st'y dwells., 14′ x 26′; G. W. Blabon, owner.

Second St., above York St., 2 three-st'y dwells., 16′ x 30′; Dickson Bros., contractors.

Randolph St., above Columbia Ave., two-st'y dwell., 16′ x 48′; C. H. Blessing, owner.

Nineteenth St., above Tasker St., two-st'y dwell., 16′ x 42′; D. C. Maffitt, owner.

Seventh St., cor. Moore St., 4 two-st'y dwells., 16′ x 44′; T. C. Nesbitt, contractor.

Seventh St., cor. Snyder Ave., 2 two-st'y dwells., 16′ x 42′; Jos. Heacock, contractor.

Darien St., above Huntingdon St., 11 two-st'y dwells., 13′ x 28′; F. A. Colamer, owner.

Thirty-eighth St., cor. Ludlow St., addition to church, 35′ x 90′; J. M. Leamy, contractor.

Bringhurst St., No. 29, Germantown, three st'y dwell., 16′ x 46′; W. R. Dougherty, contractor.

Tacony St., e of Pratt St., three-st'y dwell., 20′ x 62′; Thos. Waters, contractor.

Manton St., above Twenty-second St., 13 two-st'y dwells., 15′ x 38′; H. R. Coulomb, owner.

Pulaski Ave., cor. Township Line, 4 two-st'y dwells., 12′ x 28′; Wm. Mackey, contractor.

Ashmead St., e of Main St., two-st'y dwell., 16′ x 48′; Geo. Kranich, owner.

Reese St., cor. Cambria St., 9 three-st'y dwells., 13′ x 42′; Jno. S. Baldt & Son contractors.

River Road, cor. Shawmont St., three-st'y dwell., 35′ x 40′; F. Carpenter, contractor.

Chelten St., w of Morris St., 2 two-st'y dwells., 32′ x 40′; Geo. Hearsh, contractor.

Reese St., below York St., two-st'y factory, 29′ x 55′; Jas. McCartney, contractor.

Philip St., above Lehigh Ave., one-st'y shop, 35′ x 35′; Jas. McCartney, contractor.

Ridge Ave., cor. Wissahicon Lane, three-st'y hotel, 31′ x 50′; A. A. Harner, owner.

Abington Ave., cor. Thirty-second St., club-house, 48′ x 55′ 6″; Wm. C. Mackin, contractor.

Wissahicon Ave., above School Lane, two-st'y stable, 24′ x 50′; C. C. Hinchuan, contractor.

Twenty-fourth St, above Berks St., 18 two-st'y dwells., 14′ 3″ x 56′; J. M. Smaltz, owner.

Huntingdon St., w of Seventh St., 13 two and three-st'y dwells., 16′ x 50′; C. H. Wisler, owner.

Forty-seventh St., bel. Lancaster Ave., two-st'y dwell., 34′ x 45′; John Bateson, contractor.

Spring Garden St., No. 3707, 2 three-st'y dwells., 19′ x 59′; Jos. O. Conady, contractor.

Spring Garden St., No. 3707, two-st'y stable, 20′ x 30′; Jos. O. Conady, contractor.

Hamilton St., No 432, three-st'y addition, 16′ x 42′; C. J. Wallace, contractor.

Fifth St., above Tioga St., 2 two-st'y dwell., 15′ x 42′; J. B. Vanderslice, contractor.

Dutton St., above Godfrey St., 2 two-st'y dwells., 14′ x 34′; James Watkins, owner.

Germantown Ave., cor. Huntingdon St., two-st'y store, 16′ x 60′; D. M. Collamer, owner.

Fifteenth St., cor. York St., one-st'y chapel, 30′ x 60′; C. C. Hancock, owner.

Federal St., No. 921, three-st'y dwell., 18′ x 56′; D. P. McClare, contractor.

Washington St. (Tacony), two-st'y dwell., 34′ x 52′; A. R. Crosta, contractor.

Howard St., No. 2109, three-st'y dwell., 18′ x 60′; George Kessler, contractor.

North Front St., No. 1235, addition to foundry, 24′ x 36′; Wm. H. Haddock, contractor.

Vine St., No. 1917, three-st'y back building, 13′ x 48′ Jno. Fitzpatrick, contractor.

Cherry St., w of Fourth St., four-st'y factory, 40′ x 50′; Thos. Little & Son, contractors.

Richmond St., w of Vienna St., 2 three-st'y dwells. 17′ x 30′; J. W. Chestnut, contractor.

Taber St., s of Dickinson St., 7 two-st'y dwells., 14′ x 28′; J. Simpson, contractor.

Thirty-seventh St., cor. of Pouellton Ave., 2 three-st'y dwells., 18′ x 51′; Hartman Grow, contractor.

York Road, w of Butler St., 5 two-st'y dwells., 15′ x 30′; M. Metzler, contractor.

Franklin St., below Sellers St., 2 two-st'y dwells., 16′ x 46′; M. C. Hallowell, contractor.

Wistar St., bet. Wakefield and Boynton Sts., 3 three-st'y dwells., 18′ x 48′; G. W. Baxter, contractor.

Ashmead St., w of Wakefield St., 2 three-st'y dwells., 16′ x 28′; J. J. Sharfe, contractor.

Front St., cor. of Noble St., addition, 25′ x 59′; Washington Gear, contractor.

Haverford St., w of Fifty-fifth St., market-house, 20′ x 40′; C. F. Wells & Son, contractors.

Sansom St., w of Eighteenth St., addition, 24′ x 85′; Jacob G. Myers, contractor.

Aspen St., w of Forty-first St., church, 45′ x 74′; Hugh Chain, contractor.

Chestnut St., No. 1031, addition to back building, 22′ x 60′; B. J. Ross, contractor.

Norris St., e of Twenty-third St., 10 three-st'y dwells., 16′ x 54′; E. H. Flood, contractor.

James St., No. 135 (Falls of Schuylkill), 2 two-st'y dwells., 16′ x 32′; J. F. Reichard, contractor.

Nineteenth St., above Girard Ave., 7 three-st'y dwells., 17′ x 58′; B. Ketcham, contractor.

Walnut St., No. 700, addition, 25′ x 36′; B. Ketcham, contractor.

North Sixth St., No. 119, four-st'y back building, 16′ x 36′; G. Morris & Sons, owners.

West College Ave., n of Girard Ave., stable, 14′ x 36′; Jno. Wiggins, contractor.

Rochester, N. Y.

It is proposed to build a new church edifice, chapel and rectory on the East Avenue property now owned by Christ Church parish, to be all of stone, church to seat 800. Plans are being prepared by Walker & Nolan, architects.

Improvements are being made to the dwelling of Patrick Cox, Esq., on East Ave.; cost, $10,000; Jas. G. Cutler, architect; J. W. Finucane, builder.

Plans are being figured on for the remodelling of dwelling on East Ave., owned by A. M. Lindsay, Esq.; cost, $6,000; J. G. Cutler, architect.

Mr. Cutler is also preparing plans for a large dwelling for J. E. Gordon, Esq., on Lake Ave.; cost, $20,000. Also a brick dwelling house on North Ave. for Mr. J. R. Lux, to cost $6,000.

St. Louis.

BUILDING PERMITS.—Fifty-two permits have been issued since our last report, seventeen of which are for unimportant frame houses. Of the rest those worth $2,500 and over are as follows:—

J. E. Kaime, two-st'y brick dwell.; cost, $21,000; Geo. I. Barnett & Son, architects; sub-let.

Boge & Sitzen, 2 adjacent two st'y brick stores and tenements; cost, $3,500; Jno. Marquardt, contractor.

Ben Buchler, two-st'y double brick dwell.; cost, $4,400; P. Diehl, contractor.

M. & S. Bauman, 2 adjacent four-st'y brick dwells.; cost, $3,500; A. Grable & Co., architects; A. E. Cook, contractor.

C. C. Grady, 3 adjacent two-st'y stores; cost, $4,-200; C. C. Grady, contractor.

P. Schick, two-st'y brick dwell.; cost $6,000; T. H. Terrence, architect; T. H. Goss, contractor.

T. Burges, two-st'y brick dwell.; cost, $4,000; T. H. Terrence, architect; T. H. Goss, contractor.

C. Rose, two-st'y brick dwell; cost, $3,000; T. H. Terrence, architect; T. H. Goss, contractor.

F. Varrellmann, 2 adjacent two-st'y stores and dwells.; cost, $6,800; Volk & Tacks, contractors.

H. G. Saulard, three-st'y brick store with rooms above; cost, $4,000; Kirgin & Bro., contractors.

Thomas Hennessy, two-st'y brick dwell.; cost, $3,-000. O'Malley & Bro., contractors.

C. S. Russell, two-st'y double brick dwell.; cost, $8,000; Chas. E. Illsley, architect; Wm. Daman, contractor.

D. W. Harton, two-st'y double brick dwell.; cost, $5,500; G. W. Barnes, contractor.

Chas. Mann, 2 adjacent two-st'y stores and tenements; cost, $7,000; sub-let.

Wm. Vassimeyer, 4 adjacent two-st'y brick dwells.; cost, $12,000; Berger Steinman, contractor.

Jas. A. Roberts, 2 two-st'y brick dwells.; cost, $10,-000; Thos. Manning, contractor.

St. Louis Mutual Building Co., two-st'y brick dwell.; cost, $2,800; E. Mortimer, architect; J. Gager, contractor.

H. Hering, two-st'y double brick dwell.; cost, $5,-200; A. Beinke & Co., architects; Paulus & Weidemüller, contractors.

James A. Lightholder, three-st'y store, hall and rooms; cost, $5,500; Thos. Gugarty, contractor.

Equitable Life Insurance Society of New York, 4 additional stories to and altering a six-st'y office building; cost, $13,500; A. Cameron, architect; sub-let.

E. P. Bronson, two-st'y brick addition to dwell.; cost, $3,000; Chas. E. Illsley, architect; Barnett & Duffner, contractors.

Dan Cantlin, five-st'y double store; cost, $31,500; Geo, I. Barnett & Son, architects; Francisco & Tirman, contractors.

P. A. Neil, five-st'y brick store; cost, $18,500; Geo. I. Barnett & Son, architects; Francisco & Tirman, contractors.

T. & F. Clark, three-st'y double brick store and rooms above; cost, $16,000; Francisco & Farnum, contractors.

St. Louis Mutual House Building Co., two-st'y brick dwell.; cost, $2,500; E. Mortimer, architect; Wm. Schaefer, contractor.

West End Improvement Co., brick skating rink; cost, $30,000; J. B. Legg, architect; A. E. Cook, contractor.

W. T. Barnett, two-st'y brick dwell.; cost, $5,450; J. B. Legg, architect; A. E. Cook, contractor.

Catharina A. Marmaduk, two-st'y brick repairing; cost, $2,500; sub-let.

Heinrichsyemeinde, two-st'y brick school building; cost, $11,474; B. J. Goesse, architect; H. Wanschaffe, contractor.

Aedemtarist fathers, two-st'y brick dwell.; cost, $10,000; B. J. Goesse, architect; A. Remmers, contractor.

John Farrell, two-st'y double brick tenement; cost, $3,000; T. Gugerty, contractor.

Aug. Rebenack, 2 adjacent two-st'y brick tenements; cost, $3,500.

C. E. Briggs, 2 adjacent two-st'y brick tenements; cost, $3,200; A. Beinke & Co., architects; Baumhoff & Kennel, contractors.

J. Sheshan, 3 adjacent two-st'y brick tenements; cost, $70,000; T. J. Furlong, architect; Mulcahny & Milburn, contractors.

St. Paul, Minn.

BUILDING PERMITS.—Two-st'y frame dwell., s s of Farrington Ave., bet. Iglehart and Marshall Ave.; cost, $1,800; owner, A. E. Elder.

Two-st'y frame dwell., s s of Beech St., bet. Arcade and Mendota Sts.; cost, $2,000; owner, F. W. F. Roch.

Two-st'y frame dwell., w s of Burr St., bet. Whitall and York Sts.; cost, $3,500; owner, Anna Wheeler.

Two-st'y brick dwell., s s of Portland Ave., bet. Arundel and Mackubin Sts.; cost, $10,000; owner, J. W. White.

Two-st'y frame dwell., n s of Moore St., bet. Jeanne and St. Anthony Sts.; cost, $1,600; owner, S. S. Murray.

Three-st'y brick block stores, offices and hall, e s of Dakota Ave., bet. Fillmore and Fairfield Sts.; cost, $10,000; owner, Geo. Marti.

Two-st'y frame dwell., e s of St. Albans St., bet. Division and Hayne Sts.; cost, $2,000; owner, C. O. Merrill.

Two-st'y block of stores and dwell., e s of Kittson St., bet. Fifth and Sixth Sts.; cost, $10,000; owners, L. K. Stone and C. P. Rogers.

Two-st'y frame dwell., s w side of Van Slyke Ave., bet. Crop and Churchill Sts.; cost, $3,000; owner, Carey 1. Wanen.

Two-st'y frame dwell., n s of Wineford St., bet. Anita and Cambridge Sts.; cost, $2,200; owner, J. N. Wilgus.

Three-st'y double brick dwell., w s of St. Peter Sts., bet. Tilton and Bluff Sts.; cost, $8,000; owner, J. J. Watson.

Two-st'y frame dwell., w s of Mackalester Ave., bet. Hamilton and Summit Sts.; cost, $2,000; owner, M. Taylor.

Two-st'y frame dwell., n s of Davidson St., bet. Grotto and Miller Sts.; cost, $1,650; owner, R. C. Statham.

Two-st'y frame carpenter shop, n s of Seventh St., bet. Frank and Phalen Sts.; cost, $2,500.

Three-st'y brick block stores and offices, cor. of Robert and Eleventh Sts.; cost, $20,000; owner, Alfred Dufrene.

Frame addition to church, s s of Charles St., bet. Kent and Dale Sts.; cost, $4,000.

Two-st'y frame dwell., s s of Susan St., bet. Bidwell and Bellows Sts.; cost, $3,000; owner, C. H. Hubbard.

Two-st'y frame dwell., s s of Mill St., bet. Dakota and Edward Sts.; cost, $2,000; owner, Chas. Fitzer.

Two-st'y brick store and dwell., n s of Eleventh St., bet. Broadway and Pine St.; cost, $3,000; owner, Peter Hoffmann.

Three-st'y brick store and dwell., s s of Sixth St., bet. Franklin and Washington Sts.; cost, $4,500; owners, Nachtchein & Andres.

Two-st'y double frame dwell., s s of Ashland St., bet. Western and Arundel Sts.; cost, $6,000; owner, John Caulfield.

Two-st'y frame dwell., n s of Dayton St., bet. Kent and Dale Sts.; cost, $3,500; owner, Dr. C. E. Riggs.

Three-st'y double brick store, e s of Dakota Ave., bet. Fillmore and Fairfield Sts.; cost, $10,000; owner, Geo. Martin.

City Assessor Case has completed his enumeration and assessment of new buildings in the different wards. According to the footings, the value of buildings erected during the past year is about $3,-600,000, against $3,000,000 in 1844 and $3,500,000 in 1883. This is a larger total than had been expected, the assessor having previously estimated the total for 1885 at $2,000,000.

General Notes.

ALEXANDRIA BAY, N. Y.—Frame school building; cost, $8,000; owner, School Committee; architects, Johnston & Buell, Ogdensburg, N. Y.

BIRMINGHAM, ALA.—Central Bank building, two-st'y brick and stone; cost,$7,000; T. C. Thompson & Co., builders; Chas. Wheelock, architect.

Janhoose & McLester, two-st'y brick business house, 82′ x 100′; cost, $9,000; Chas. Wheelock, architect.

Mrs. Tillie Richards, two-st'y frame dwell.; cost, $6,000; T. D. Lipes & Co., builders; Oliver Marble & Son, architects.

Jefferson County Jail, two-st'y, of brick, stone and iron; cost, $1,900; Chas. Wheelock, architect.

Dr. H. M. Caldwell, two-st'y brick business house; cost, $4,500.

W. B. Peebles, two frame dwells.; cost, $3,400; T. D. Lipes & Co., builders.

Sam'l Ullman, two-st'y frame dwell.; cost, $4,500; Oliver Marble & Son, architects.

White Baptist Church, frame 82′ x 82′; cost,$7,000; Oliver Marble & Son, architects.

Judge T. B. Lyons, two-st'y frame dwell.; cost, $3,800.

J. S. Garrett, two-st'y frame dwell.; cost, $2,500; T. C. Thompson & Co., builders.

Colored Baptist Church, brick, 50′ x 91′; cost, $8,-000; Oliver Marble & Son, architects.

CONCORD, N. H.—There will be required for building the proposed chapel at St. Paul's School $75,000, and for its endowment $25,000, of which $80,093.02 has been subscribed. Efforts are being made to secure the balance in season to have the corner-stone laid at the coming anniversary.

CORNWALL, ONT.—Brick dwell.; cost, $5,000; owner, McClellan; architects, Johnston & Buell, Ogdensburg, N. Y.

HARTFORD, CONN.—A house is to be built on Kenyon St. for Mr. Clayton Wolcott. Mr. Melvin P. Hapgood is the architect; contract has been awarded to Messrs. Stoddard & Fox.

MARLBORO, MASS.—The Protestant Episcopal people

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BUILDING INTELLIGENCE.

of Marlboro are contemplating the construction, at an early day, of a chapel.

New Haven, Conn. — Hiram Camp has offered to give a chapel costing $10,000 for a mission near East Rock Park.

Pontiac, Ill. — Brick church; cost, $13,000; owner, Methodist church; architects, Johnston & Buell, Ogdensburg, N. Y.

Trenton, N. J. — The State-house Re-building Commission, after a long consideration of the plans for re-building the burned part of the building, and attempting to devise a way of erecting a $100,000 worth of capitol out of a $50,000 appropriation, has finally gave up in despair and decided to abandon the whole matter.

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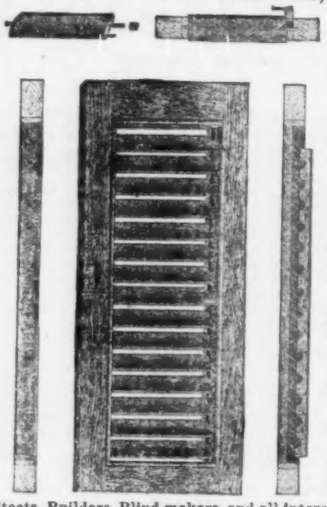

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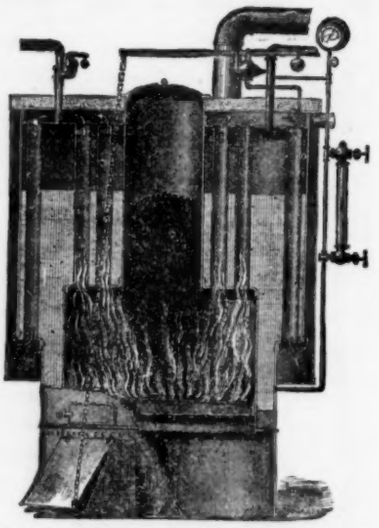

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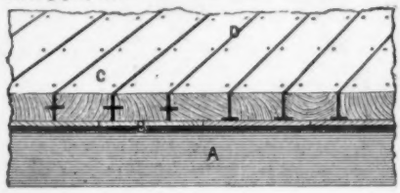

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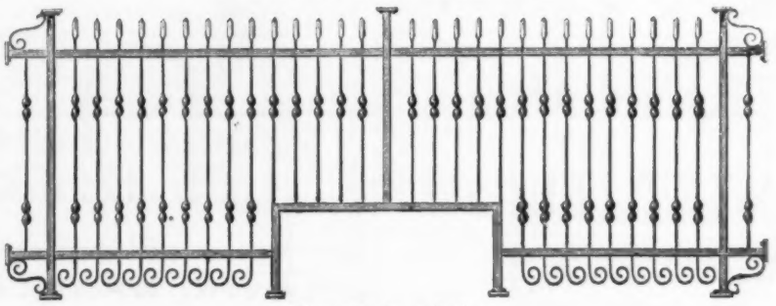

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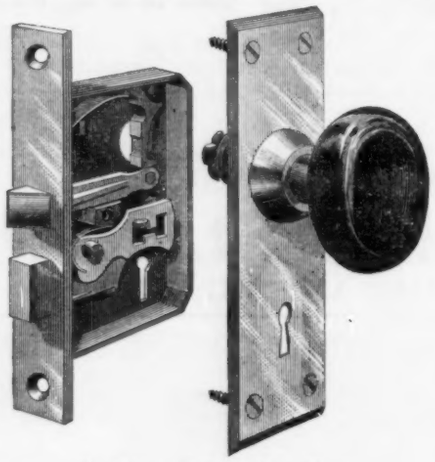

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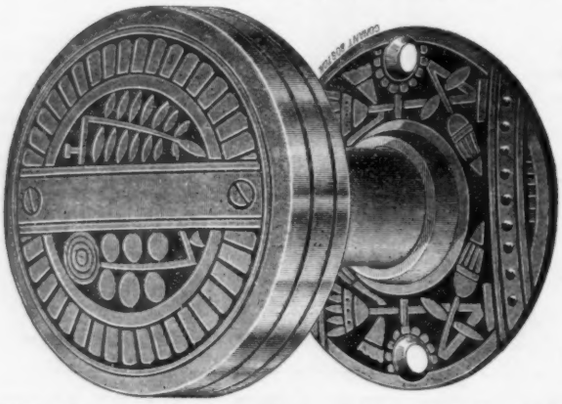

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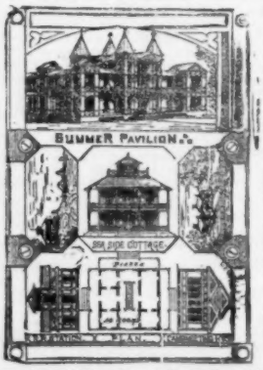

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on so ambitious a scale as those just noticed. Mr. Jackson also sends two drawings of his Brighton College. This is more Gothic in style than his Oxford work — Tudor, we might call it, for want of a more appropriate name. One view shows the interior of the quadrangle, with the hall, chapel and boarding-houses, in which a picturesque tower forms a prominent feature. The other view is the entrance gateway and tower — a most effective group, thoroughly well designed and most carefully detailed. It is really a pleasure to see such good work as this being done at our colleges and schools, showing that they are quite abreast of the times in their efforts to secure high-class architectural surroundings, and which, let us hope, are not without their influences on the young minds thronging their halls and class-rooms. In this connection we must notice Mr. Basil Champney's Indian Institute at Oxford, and also Mr. J. J. Stevenson's new Laboratory for Cambridge University, both in that phase of free Classic affected by their authors. The former has the failing of being rather too much broken up along the side elevation, but the front towards Broad Street is much better. A considerable amount of Indian character has been worked into the carving and other details, notably in the figures under the upper stage of the angle tower. The drawings as such, two elevations, are hardly worthy of the work, which is very effective in execution. Mr. Stevenson's Cambridge building is chiefly remarkable for the series of large Queen-Anne-looking windows in the principal front. It also is not by any means assisted by the drawing, a perspective, which shows it. Both are a long way behind Mr. Jackson's contributions in this respect. Is it that he is much the best draughtsman of the three? We fancy it must be so.

Taking the collection more seriatim we find at the beginning some remarkable specimens of beautiful draughtsmanship, as in the Shakespeare tower of the Memorial Theatre, Stratford-on-Avon, by Mr. W. F. Unsworth, a most striking piece of work, with a bridge and covered way over it leading to the tower, all very cleverly designed and likely to be seen by many American visitors to Shakespeare's town. Following this are two equally effective drawings by Mr. Flockhart of a house and studio he has built for Mr. Mac Whirter, A.R.A., in St. John's Wood. The house is clever enough in design, but the drawings, as such, are most admirable in their breadth of treatment and simplicity of effect, unsurpassed in this respect by any in the room.

In quite a different type and style is Mr. Phené Spiers's design for the central portion of a public building — a remarkably good piece of Classic work, sustaining to the full his reputation both as draughtsman and designer. One cannot help wishing the coming War Offices were as good Classic as this. Another admirable drawing by Mr. Spiers is the entrance to Mr. W. Edis's Constitutional Club, Northumberland Avenue, showing a very rich design now being carried out in red and buff terra-cotta, the only regret being that for such an important building some more noble material, such as stone or marble, or both, should not have been employed. We have got into a kind of terra-cotta craze just at present. How much one well-known member of the Academy is responsible for it we would hardly like to say, but like most crazes it seems to be catching, and we are being treated to important works in hard and somewhat rough terra-cotta, which a few years ago would have been built in more sympathetic stone and brick, and we cannot say the change is a welcome one, either from an artistic or a constructive point of view. Let us hope that as the fit is a sharp one it may pass as quickly away, and leave us wiser and better for the future.

Two or three fine examples of church work hang together near the beginning of the room. The proposed restoration of the south transept of Chester Cathedral, by Mr. A. W. Bloomfield, is shown in a beautiful drawing. Its principal feature is a great fourteenth-century window; but how much of this is really old and how much "restored," it is impossible to tell without a drawing of the front "as it is at present." If the work is carried out as well as it is here drawn, it promises to be a great success. Then there is the "Church of St. Hilda," Whitby, by Mr. R. I. Johnston, of Newcastle, one of the best architects in the north of England. It is a very fine church in late Gothic, with a great square tower at the crossing. And, lastly, there is the design for a proposed new church in the diocese of Ely, by Mr. J. D. Sedding. This is a wonderful church in the way of planning. It has a wide nave with passage-like aisles and a morning chapel, all fitted into an irregular piece of ground, with great skill and picturesque effect. The nave has a low arcade and a very tall clerestory, and the general style of the architecture is fourteenth-century Gothic. The nave has a flat wooden ceiling, and some not very attractive colored decoration is shown on the east end of the chancel. The whole treatment, however, is very skilful, and has considerable originality in many of its features. Another work by Mr. Sedding follows closely after this, namely, "St. Saviour's Church and Parsonage," Sunbury-on-Thames. It is shown by a bird's-eye view, and has again much originality in its treatment. Its general features are late Gothic in character, with a touch of Flemish feeling here and there in some of the details. Its most noteworthy feature is probably the quaint, saddle-backed belfry-tower at the west end, underneath which is the baptistery. It is most picturesquely designed. The church has a wide nave and aisle-like passages again, but somehow the parsonage does not front very happily with the main building of the church. Before leaving Mr. Sedding's contributions, we must mention the working-drawing of the Pastoral Staff for the Bishop of Connecticut, which should be of special interest to American visitors to the gallery. It is a charming design and shown in a thoroughly good, practical drawing. Mr. Sedding has evidently given the subject most careful study, and the result is a very high-class work of art for the diocese of Connecticut, where it is to be hoped it will be as highly prized as it deserves to be.

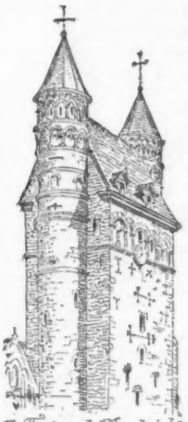
In Nos. 1756 and 1757 we have two nice views of the additions to Stowell Park, Gloucestershire, by Mr. John Belcher, a quaint, charming country house in the quiet old English style, which always looks in keeping with an English landscape. The additions are evidently carefully carried out in harmony with the previous work.

Messrs. George & Peto are, as usual, strong in domestic work. A large country house at Woolpits, Surrey, begins their contributions. It is an important work, and designed with all that picturesqueness for which they are so well known. The hall and the tower are the principal features, perhaps, but there are others equally worthy of study in that they have been carefully studied themselves. Even better, perhaps, is their "House at Ascott," a charming English country house, with a private chapel attached. There is some clever planning in it, also, and the manner in which the veranda is worked-in is worth the attention of all interested in such a feature. The "veranda" has not the importance with us that it has in America, so as a subject it has not probably had the same amount of study in the old country as in the new, but here is an example worth noting, in that it is part and parcel of the house, and not simply stuck on against a wall, as in too many instances. There is also a town house at "Collingham Gardens, Kensington," by George & Peto, which is much the same in style as several they have done in the same neighborhood. One cannot leave these designs without again bearing testimony to the charming manner in which they are drawn. In brown ink, with washes of warm brown color, Mr. George has developed a style quite his own, and which we notice has already a few followers in the Exhibition. They also send a drawing of their Eardley Memorial Church, at Streatham, but it is not by any means equal to their domestic work.

There is a very clever design for a "Town Gate-House and Bridge," by Mr. E. G. Dawber, one of the Royal Academy students, which is much above the average of student's work generally. It is both well-drawn and well-designed, and gives much promise for the future of its young author. In this connection, also, we may mention another student's design, that for a "municipal mansion," by Mr. Arnold Mitchell, also very clever and picturesque, — rather too much of the latter. This is one of the drawings, both in design and draughtsmanship, which we referred to as following Mr. Ernest George. He has evidently been in Mr. George's office or come under his influence, as it is full of his style and feeling.

Near this is Messrs. Weatherby & Jones's new Hatchett's Hotel and White Horse Cellars, Piccadilly, well known as the headquarters of the coaching interest, and the scene here between ten and eleven on a fine summer morning quite carries one back to the good old coaching days, so many fours-in-hand are starting on their different journeys. The new hotel, however, does not quite recall the old associations. It is very "new," Queen Anne of the most fashionable type, with scrollified gables, tall chimneys, and all the rest of it. It is rather too fussy; though the detail is in many respects good, it is too much cut up, as if the authors had tried to get in everything they could. The White Horse Cellar is still "a cellar," and that's about all that is left of the old features of the house.

INLAND NAVIGATIONS IN EUROPE.[1]



A Tower at Maestricht Holland.

THE lecturer premised that his professional experience being mostly in connection with the great rivers of Continental Europe, his remarks on the inland navigations of Great Britain would be brief. The lower parts of the chief rivers of the United Kingdom were mostly arms of the sea, navigable at high water by ships of the largest burden. The principal waterway, the Thames, was navigable for about one hundred and ninety-four miles, and was united by means of a grand net-work of canals with the Solent, the Severn, the Mersey, the Humber, and the Trent, being thus in direct communication, not only with the English and Irish Channels, but also with every inland town of importance south of the Tees. Other river and canal navigations were briefly noticed, among them Telford's masterpiece, the Caledonian Canal, and the estimated length of inland waterways in the United Kingdom was given as five thousand four hundred and forty-two miles, which had been constructed at a cost of £19,145,866.

Turning to the Continent, Russia next claimed attention as having the greatest extent of water communications. Its principal highway was the Volga, the largest river in Europe, which, in a course of more than two thousand miles, drained an area of five hundred and sixty-three thousand square miles, and afforded, with its tributaries seven thousand two hundred miles of navigation, but of very unequal capacity, owing to the shallow depth of some portions.

[1] The fourth of the course of special lectures on "The Theory and Practice of Hydro-Mechanics" delivered at the Institution of Civil Engineers, on Thursday evening, the 19th of March, by Sir Charles A. Hartley, K.C.M.G., M. Inst. C.E., the subject being "Inland Navigations in Europe." The chair was occupied by Sir Frederick J. Bramwell, F.R.S., the President.

Hitherto, no permanent works had been undertaken to improve the navigation of the Volga, but dredging had been resorted to in the lower part of the stream, and recently a system of scraping by iron harrows had been employed, which was stated to have doubled the depth of water over certain shoals in a few days. In the lecturer's opinion the Russian Government would hesitate a long time before embarking in costly improvement works, the effect of which would be very uncertain. Other important water communications in Russia were the Caspian — an inland sea of one hundred and sixty thousand square miles extent; the River Don, nine hundred and eighty miles in length, and draining one hundred and seventy thousand square miles; the Dnieper, draining two hundred and four thousand square miles and with a course of one thousand sixty miles. Of secondary rivers, the Bug, the Dniester, the Duna and the Neva were all navigable; in the case of the latter short, but most important means of communication, a maritime canal eighteen miles in length had recently been completed to unite Cronstadt with St. Petersburg. About nine hundred miles of canals had been constructed in European Russia. In most instances they had been formed with but little difficulty, across the gentle undulations of the great watershed, the object being to connect the head-waters of rivers which had their outlets at opposite extremities of the continent.

Sweden abounded with lakes, which covered more than fourteen thousand square miles of its surface, but none of the rivers were navigable except those which had been made so artificially, nearly all of them being obstructed by cataracts and rapids. Nevertheless, Sweden possessed remarkable facilities for internal navigation during the seven months that the country was free from ice, intercourse being carried on by means of a series of lakes, rivers, and bays, connected by more than three hundred miles of canals. Of the latter, the most celebrated was the Gotha Canal, designed under the auspices of Count von Platen, by Telford, the first President of this Institution.

Germany owned parts of seven river valleys and three large coast streams, viz., the Niemen, the Eyder, the Vistula, the Pregel, the Oder, the Elbe, the Weser, the Ems, the Rhine, and the Danube. Of these the Weser was the only one which belonged wholly to Germany, while of the Danube but one-fifth part ran through her territory. The hydrography of all these rivers was briefly described. The inland navigations of Germany were of the most advanced character, an immense trade being carried on upon them by means of barges and rafts. In the case of the Elbe, the system of towing by submerged cable had taken a large development. As early as 1866 chain-tugs were running on two hundred miles of its course, and in 1874 this mode of traction had been so increased that there were then twenty-eight tugs running regularly between Hamburg and Aussig. These tugs were one hundred and thirty-eight feet to one hundred and fifty feet long, twenty-four feet wide, with eighteen inch draught. On the Upper Elbe the average tow was from four to eight large barges, and, taking the ice into consideration, there were about three hundred towing-days in the year. It was found that large vessels paid best; thus, in the case of the Hamburg-Magdeburg Navigation Company, the cost of transporting a cargo from Hamburg to Dresden — a distance of three hundred and fifty miles — for barges of one hundred and fifty tons, three hundred tons, and four hundred tons, was respectively 11*s.* 6*d.*, 9*s.* 9½*d.*, and 9*s.* 4*d.* per ton up stream, and 4*s.* 4½*d.*, 3*s.* 2½*d.*, and 2*s.* 9½*d.* per ton down stream. Although Germany possessed a length of nearly seventeen thousand miles of navigable rivers, or more than double the combined length of the navigable streams of the United Kingdom and France, it could not be said to be rich in canals. In South Germany the Regnitz and Ludwig Canals, from the Main at Bamberg to the Danube, were the only ones of importance until the annexation of Alsace-Lorraine. The North German plain had several canals, the most important of which were referred to in the remarks on the chief river systems of the empire. In 1878 the total length of the seventy canals of Germany was only twelve hundred and fifty miles, a very small extent when compared with the other canal systems of Western Europe.

Holland possessed the great advantage of holding the mouths of the Rhine, the Maas, and the Scheldt. Her means of river communication with Germany, France, and Belgium, were unbounded, and the possession of a length of nine hundred and thirty miles of canals and three hundred and forty miles of rivers enabled her, apart from her railways, to carry on her large trade with greater facility of transport than, perhaps, any other European country. One of the principal artificial works in Holland was the North Holland Canal, constructed by Blanken in 1819–25, at a cost of nearly £900,000, and esteemed the greatest work of its day; it was fifty-two miles long and eighteen feet deep. It had now been almost superseded by the Amsterdam Canal, constructed by Sir John Hawkshaw, and of which a detailed account was to be found in the Minutes of Proceedings.

Belgium shared with her northern neighbor the advantages of an elaborate system of waterways. The principal were the Meuse and the Scheldt. The total length of the Meuse, which was canalized at difficult places, was five hundred and eighty miles, of which four hundred and sixty miles were navigable. But by far the most important river of Belgium was the Scheldt. Thanks to its unique position at the head of a tidal estuary, to the abolition of the Scheldt dues, and to the foresight and liberality of the Belgian Government, which had spent £4,000,000 on dock and river works since 1877, Antwerp had now become in many respects the foremost port of the Continent. Besides her seven hundred miles of navigable rivers, Belgium possessed about five hundred and forty miles of canals, by means of which communication existed between all the large towns and chief seaports of the kingdom.

France had built up, and was constantly extending, an elaborate system of canals and canalized rivers. Of the latter the Seine was the most important in regard to the artificial works undertaken for its improvement, and for the tonnage of the traffic, which was in 1872 more than one-eighth of the whole water-borne traffic of France. The lecturer successively passed in review the Loire, the Garonne, and the Rhône, all of which important rivers had been largely benefitted by the art of the engineer. The canal system of France was historic, one of the earliest of these artificial cuts being the celebrated canal of Languedoc, one hundred and seventy-one miles long, and built by Riquet in 1667–81, and now forming part of the Canal du Midi. From its summit level, six hundred feet above the sea, it communicated with the Garonne, and therefore with the Atlantic, by twenty-six locks, while its southern slope descended by seventy-three locks to the Mediterranean. Statistics were given showing that, up to 1878, on seven thousand and sixty-nine miles of waterways, France had spent upwards of £43,000,000, or considerably more than double spent by the United Kingdom up to 1844. Nevertheless, it was intended still further to extend, improve, and systematize this means of communication, at an estimated further cost of £40,000,000.

Spain and Portugal possessed partly in common eight principal rivers, of which five, the Minho, Douro, Tagus, Guadiana, and Guadalquivir, drained the western valleys and flowed into the Atlantic, while the other three, the Ebro, Jucar, and Segura, discharged into the Mediterranean. The characteristics of these rivers were described. As a rule they were only navigable for a limited portion of their course, and were chiefly remarkable for the exhibition of peculiar natural phenomena and of extremes of flood discharge, a velocity of sixteen knots an hour having been noted in the Douro under certain conditions of tide. The canals of the Iberian peninsula were unimportant; Spain possessed a length of one hundred and thirty miles in 1875.

Italy was not rich in waterways except in the valley of the Po, the navigable portion of her rivers only attaining an aggregate length of eleven hundred miles. Of these the Po, the Adige, and the Tiber were the chief, and their principal points were discussed by the lecturer. Although the total length of navigable canals in Italy was only four hundred and thirty-five miles, the Italians were the first people of modern Europe that attempted to plan and execute such artificial waterways. As a rule, however, they had been principally undertaken for the purposes of irrigation. Of the Italian canals the most important were the Cavour Canal in Piedmont, the Grand Canal in Lombardy, and the canals of Pavia and Martesana. The provinces of Venice, of Padua, and the Emilia had all excellent canal systems.

Austria-Hungary possessed in the Danube the largest river in Europe, as regarded the volume of discharge, although it was inferior to the Volga in the length of its course and the area of its basin. This great stream first became navigable for flat-bottomed boats at Ulm, one hundred and thirty miles from its source. In its total length of seventeen hundred and fifty miles it was fed by at least three hundred tributaries, many of them large rivers, such as the Inn, the Drave, the Save, the Theiss, the Olto, the Sereth, and the Pruth. Indeed, the seven tributaries mentioned had a combined length of twenty-nine hundred miles, and drained one-half of the Danube basin. The navigation interests of this grand river system were of the highest importance, both from the commercial and the engineering points of view, and the lecturer dwelt at length on the works of improvement executed under different governments and administrations, dividing his remarks under three heads, namely, the Upper and Middle Danube, the Lower Danube, and the Mouths. After leaving Bavaria, the upper and middle section of the river passed through Austro-Hungarian territory, and had been the subject of continuous and unceasing effort in the direction of improving its capacity for navigation. Although the Danube between Vienna and Old Moldova had been regulated in numerous places and at great cost, there had been but little appreciable improvement effected in its general navigable depth. On this account, projects having in view the permanent acquisition of a sufficiently wide channel of from six feet to eight feet deep at every point between Passau and Basias had lately been prepared by Government engineers, which involved an outlay of £2,000,000 to effect the desired improvements. Traffic on the Upper and Lower Danube was mostly carried in about eight hundred barges belonging to the Danube Steam Navigation Company, of which the greater number gauged two hundred and fifty tons. Much valuable information respecting the mode of traction on the Middle Danube has been procured from Mr. Murray Jackson, the engineer of the company in question, to whom, as well as to several other correspondents who had likewise kindly aided him in procuring information on other matters connected with his discourse, the lecturer tendered his acknowledgments.

The Lower Danube began at the foot of the Iron Gates, and terminated at the outfall in the Black Sea. The principal features of this section of the river were described, and it was stated that between the Iron Gates and Ibraila there was frequently a depth of forty feet at low water, but at seasons of very low water this depth was not more than nine feet, and at the Nicopoli, Sistov, and Tchernavoda shoals it was reduced to seven feet, six feet and four and one-half feet respectively.

In conclusion, an account was given of the works undertaken by

the International Commission, to which body the lecturer was appointed engineer in 1856, and had designed and carried out the works at the Sulina mouth now on the eve of completion. The achievement of the programme of the Commission had resulted in there being everywhere a navigable depth of from seventeen feet to twenty feet at the season of high water, and a minimum depth of fourteen feet at low water. In the Sulina branch, nine of its worst shoals had been successfully dealt with, and three cut-offs had been made, by which the river had been shortened two miles, and eight of its worst bends entirely suppressed. The total cost of these river-works, including maintenance and dredging, had not exceeded £300,000. At the Sulina mouth, where there was only a depth of from eight feet to ten feet before the construction of the piers, the depth for many years past, unaided by dredging, had not been less than twenty and one-half feet. The cost of the piers, including their maintenance to the present time, had been about £220,000. The effect of these improvements had been to increase the trade from six hundred and eighty thousand tons gross in 1859 to one million five hundred and thirty thousand gross tons in 1883, and to lower the charges on shipping from an average of 20*s.* per ton for lighterage before the deepening of the Sulina mouth and the improvement of its branch, to 2*s.* per register ton at the present time for commission dues. As a commentary on the hostile criticism evoked when the scheme was initiated, the lecturer drew attention to two facts, namely, that the works so unsparingly criticised in 1857 had already effected a saving of £20,000,000, and that experience had abundantly proved that the predictions of a rapid silting-up to seaward of the Sulina piers had been completely erroneous.

THE BUILDING STONES OF INDIANA.

IN the Report of the Geological Survey of Indiana for the year 1878 is a useful chapter on the occurrence and physical properties of the building stones of that State, from which we are enabled to make the following summary.

The State of Indiana is extremely rich in this essential material. The limestones, however, constitute by far the most characteristic and valuable building stones of the State. In the following we give a summary of the qualities of the more important of these:

North Vernon Bluestone. — This stone is a bluish-gray limestone, moderately close-grained, with slightly conchoidal fracture, lying in seams from one to two feet thick. The principal centres where it is quarried are North Vernon and Deputy. The total exposure of the North Vernon blue stone is about 30 feet thick, and the bed covers an extended area in Jennings and Jefferson counties. Geologically, it belongs to the Hamilton division of the Devonian. Of the entire exposure, two or three layers are considered of first quality. This stone has long enjoyed a fine reputation for massive masonry, such as foundations for public buildings, bridge abutments, etc.; where great strength and durability are essential requirements. Chemical analysis shows the stone to contain about 90 per cent of carbonate of lime, with about 2 per cent each of carbonate of magnesia and of alumina and silicates. Tests of crushing strength by Gen. Q. A. Gillmore gave 15,750 pounds to the square inch. One cubic foot weighs 165½ pounds, and the ratio of absorption is 1:156 — that is, a cubic foot will absorb less than a pint of water.

Greensburg, or Flat Rock, Stone. — This is a light-colored, close-grained, magnesian limestone, belonging, geologically, to the Niagara group, which underlies the Hamilton. It is extensively quarried at various localities in Dearborn County, but principally in the vicinity of Greensburg, on Sand Creek, and St. Paul, on Flat Rock Creek, in Decatur County. The crop is from 20 to 30 feet thick, the layers varying in thickness from 4 inches to 2 feet. Flagging may be obtained of this stone in flags 50 by 200 feet, and from 6 to 7 inches thick, without break or flaw, and which will not vary one inch in thickness over the entire surface. Stone 22 inches thick may be had of equal superfices, if it were possible to handle such masses. An analysis of samples from the Greensburg Stone Company's quarries gave as its composition 74.2 per cent carbonate of lime, with approximately 10 per cent of carbonate of magnesia, 6 per cent of insoluble silicates, 6½ per cent of oxide of iron and alumina, and about 2 per cent of chlorides of the alkalies. Gen. Gillmore gives the weight of a cubic foot as 169.98 pounds; the crushing strength of one cubic inch as 16,875 pounds; and ratio of absorption, 1:117.

Two samples of the same stone from Flat Rock Creek, near St. Paul gave about 83 per cent of carbonate of lime and 6 per cent of carbonate of magnesia. The weight of one cubic foot is 168.09 pounds; crushing strength per cubic inch, 16,000 pounds; and ratio of absorption, 1:336.

The last three stones referred to are magnesian, or dolomitic limestones. They represent a large class of building stones, quarried not only in Indiana, but also in the adjoining States of Ohio and Illinois, such as the Dayton stone of the former State, and the Joliet and Lamont of the latter. No building stones in the West have been more thoroughly tested, or are better known to architects and builders. Being more expensive to dress than the oölitic limestones (about to be spoken of), this stone has been chiefly used in Indiana for foundations and bridge abutments, for which purpose it is well adapted.

Among the most valuable building stones of Indiana may be classed the so-called oölitic limestones. They are of sub-carboniferous age, and chemically almost pure carbonate of lime. The most noted building stone of this series is obtained from strata believed to be the equivalent of the rocks that out-crop at St. Louis, and that are called St. Louis limestone in the geological reports of Illinois. The crop of this stone may be followed from Montgomery County on the north to Harrison County on the south. The workable beds are from 10 to 100 feet in thickness. The color ranges from grayish-white and bluish-gray to chalk-white. The structure, as before said, is oölitic (so named from its resemblance to the roe of a fish). The rounded segregated particles of which it is composed are sometimes so small as to be unrecognizable to the unaided eye, and again so large as to be quite conspicuous. It may be quarried in blocks of any size and thickness that may be desired. Professor Cox reports that he has seen blocks of it cut out by the steam channeler 6½ by 9½ inches in thickness and 42 feet long, and, at one of the Bedford quarries, a block of similar thickness and 66 feet long. At most of the localities where this stone is quarried, blocks of much greater length, thickness and width can be obtained if required; and, says Professor Cox, "Cleopatra's Needle might be duplicated, should a market be opened for monoliths of that character." Chemical analyses of this stone from widely separated localities yield from 96 to 98 per cent of carbonate of lime, showing it to be an almost chemically pure limestone, and of remarkable uniform composition.

The following record of tests of strength, etc., made on various specimens of this stone by Gen. Gillmore, will be useful for comparison: Simpson & Archer's stone, quarry located four miles east of Spencer, on the Indianapolis & Vincennes Railroad; weight of a cubic foot, 140.03 pounds; crushing strength per cubic inch, 7,500 pounds; ratio of absorption, 1:30.

Dunn & Co.'s stone, quarry near Bloomington; weight per cubic foot, 137.24 pounds; crushing strength per cubic inch, 13,750 pounds; ratio of absorption, 1:43.

Chicago & Bedford Stone Co.'s stone, quarry at Bedford; weight per cubic foot, 146.56 pounds; crushing strength per cubic inch, 11,750 pounds; ratio of absorption, 1:28.

Stockslager's stone, quarry in Harrison County; weight per cubic foot, 149.59 pounds; crushing strength per cubic inch, 10,250 pounds; ratio of absorption, 1:27.

The foregoing data represent very fairly the character of the oölitic limestone of the State. It is remarkably uniform in composition throughout the State, being a nearly pure carbonate of lime; its average density is about 150 pounds per cubic foot; and its ratio of absorption will average 1:30.

Concerning this stone, Professor Cox is authority for the statement that it exhibits along its outcrop a remarkable resistance to weathering, and presents a bold and well-defined face along the valleys. As a durable building stone, it has withstood the ravages of time in buildings for upwards of fifty years, and still retains the hammer and chisel marks nearly as sharp as when first cut. The density, as shown above, exceeds that of the celebrated English Portland oölite. It possesses, also, greater strength than this, and is less absorbent of water. The reliable sustaining weight of a square foot of English Portland stone is 82,000 pounds; that of the Indiana stone is 135,000 pounds.

Another excellent limestone is that found at Putnamville, in Putnam County. It is a close-grained, hard, siliceous limestone, occurring in layers varying from 5 to 22 inches in thickness. It contains about 66 per cent of carbonate of lime, and 27½ per cent of insoluble silicates, and very little magnesia. It is a very strong and durable stone; weight per cubic foot, 166.36 pounds, with a crushing strength of 11,750 pounds per cubic inch, and ratio of absorption, 1:170.

PUGIN'S ECCLESIASTICAL ORNAMENT.

ROCHESTER, N. Y.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — Can the following work be obtained in this country, and at what price: — "Pugin's *Colored* Ecclesiastical Decorations?" If not, can you refer us to any *first-class* work on *colored* English Gothic architecture; where it can be obtained, and the cost? We wish colored plates. Yours truly,

WARNER & BROCKETT.

[WE do not know that Pugin's "*Glossary of Ecclesiastical Ornament*" can be found in this country, unless J. Sabin's Sons, 64 Nassau Street, New York City, may have a copy. — EDS. AMERICAN ARCHITECT.]

HOME OR FOREIGN SCHOOLS OF ARCHITECTURE.

CHICAGO, ILL.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — I take the liberty of requesting your opinion as to whether schools of architecture in Germany or those in America offer greater advantages, from an artistic as well as practical point of view, to draughtsmen looking forward to future practice in America

An early answer through your valuable journal would greatly oblige

Yours, SUBSCRIBER.

[We would recommend our correspondent to spend two years in an American architectural school, and afterwards a year or two in a German or French school, as his prejudices in favor of one or another nationality may incline him. — EDS. AMERICAN ARCHITECT.]

REFERRED TO OUR READERS.

NEW YORK, May 27, 1885.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Gentlemen, — Can you inform us if there are any books or pamphlets now published giving general information about the construction of large-sized hotels; their requirements, arrangement, plans, etc., and if so, where they can be had. You will greatly oblige us by sending any data you may possess on the subject, or informing us where we can procure the same.

Yours truly, JOHN M. CARRÈRE.

SAN ANTONIO, TEX., May 25, 1885.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — Will you, or any of the readers of the *American Architect* kindly answer the following questions: —

1. Has "sgraffito" been employed anywhere in the United States?
2. By whom, on what building, and when?
3. If used, was it successful or unsatisfactory?

If any of our professional brethren in this country have experimented with or used "sgraffito," we would be pleased to hear from them.

Yours respectfully,

WAHRENBERGER & BECKMANN.

NOTES AND CLIPPINGS.

FATE OF THE DUBLIN EXHIBITION BUILDING. — The structure of glass and iron which was once the Dublin Exhibition of 1872 has, after a somewhat checkered career, risen Phœnix-like from its ashes, and reposing on a solid foundation formed from the débris of the old Law Courts at Westminster, and adorned with the marble columns and conservatories which once belonged to Baron Grant, is now the Albert Palace at Battersea. — *Exchange.*

TEMPLE BAR. — The numbered stones of old Temple Bar are soon to be put together and set up again in the King's Bench Walk, within the quiet precincts of the legal microcosm within a city, not a hundred miles from the fountain which was Tom Pinch's trysting place, and the slab which marks Noll Goldsmith's grave. This is better than consigning the monument to the sordid companionship of sham ruins and pinchbeck cenotaphs in the gardens of the Hall-by-the-Sea, at Ramsgate. — *Exchange.*

ONE OF THE EVILS OF NATURAL GAS. — The legal papers in a nuisance suit against the Penn Fuel Gas Company, the largest natural gas company of this locality, will be filed to-morrow by M. Woodward, attorney for William Metcalf and other residents of Cliff and Fulton Streets. For several weeks this gas company has been blowing off its surplus gas on the hill overlooking the Union Depot. At night the gas is lit, and the roaring, together with the light and heat, has so annoyed the neighboring residents that they will ask the courts to declare it a nuisance. They say that they cannot sleep, and the glare from the light is intolerable. The company answers that it must have an escape for the gas. —*Pittsburg Correspondence of the Philadelphia Press.*

OUTLOOK FOR THE GEORGIA MARBLE QUARRIES. — Several of the leading merchants in Chicago have for some time been very much interested in the development of marble quarries in Georgia. These gentlemen told wonderful stories about the extent of the deposit there and the quality of the product. Shipments made to Chicago found ready sale, and several of the new and finest buildings in Chicago, notably the Chamber of Commerce, have been supplied with Georgia marble. While admiring and preferring it to either the Italian or Vermont marble, the marble dealers who became acquainted with the Georgia marble were still very sceptical about its existence in any quantity. Until I had visited the quarries, and seen just what they promised, I must admit having no idea of their extent. But no one can go into Pickens County and give close attention to the development there without being convinced that not the half has been told about the possibilities which the marble deposits hold out. I found that the Georgia Marble Company had settled right down to work. They have acquired, either by purchase or a ninety-nine years' lease, about seven thousand acres of the choicest marble land in the country, and they are making preparations to develop it in a most generous manner. Already they have constructed two and a half miles of a narrow-gauge road which connects at Tate Station with the Marietta and North Georgia Railroad. By the first of June they expect to have facilities to quarry daily ten to fifteen carloads of marble. While they have cutting and polishing works of their own, the bulk of the marble which they quarry will be taken by the American Marble Company, which is completing cutting and polishing works at Marietta that will enable the company to handle and ship about fifteen car-loads of marble a day. This company has control of a patent machine which enables it to handle the marble much cheaper and to much better advantage than by any of the old methods, and when completed the plant will be the most complete of its kind in the country. There is every evidence of business prosperity around Marietta. —*Correspondence Chicago Inter-Ocean.*

FIRE-RESISTING PROPERTIES OF CYANITE. — Some interesting tests of the fire-resisting properties of cyanite were afforded by the manufacturers of the material (the Patent Liquid Fire-proof Cyanite Company, Limited) on Wednesday last, on the site of the abandoned Opera-House, Victoria Embankment. The material is a liquid solution, of which silica is the basis, and it is applied with a brush directly to the surface of the wood-work, serving either as a priming to be afterwards covered with paint, or as a stain in lieu of the ordinary pale oak stain, which it much resembles in color when applied to deal or other white woods, though it is also made colorless. It is claimed by the manufacturers that this solution sinks into the pores of the wood, and renders the timber for a considerable period proof against the attacks of fire. That the application of the solution has the effect of retarding the attacks of the flames for a long time was conclusively shown by the tests of Wednesday last. The tests were four in number. For the first one a small flight of stairs, constructed of one-and-one-half-inch common white pine, was primed with two coats of cyanite, and underneath it a large heap of chips and shavings, plentifully besprinkled with benzoline, was ignited and burned for half an hour before the soffits of the treads and the backs of the risers were perceptibly charred. After the lapse of another half-hour, during which the under part of the wood-work of the stairs continued to smoulder, the stairs were proved to be strong enough to bear the weight of a man. Other tests, with packing-cases, were equally successful. The cases (three in number) were each about 2 feet 6 inches deep, 3 feet 6 inches long, and 2 feet 6 inches broad. They were each stood up on end, and a large fire of shavings and chips sprinkled with benzoline was lighted in each. One of the cases was not coated with cyanite, and it speedily collapsed and became a mass of charred embers. The two other cases retained their form and position after the lapse of an hour, and it was only after the first half-hour's exposure to the flames that the wood became perceptibly charred and began to burn to any appreciable extent. It is asserted that this solution is permanent in effect and does not injuriously affect the wood-work to which it may be applied. If this be so, the solution has a wide field of usefulness open to it. — *The Builder.*

ELECTRIC-LIGHT TIME TEST. — When the Franklin Institute held its Electrical Exhibition the various electric-light companies that had gone to the expense of preparing exhibits were promised in return that the Institute would hold a practical electric-light life test, to last one thousand hours, to decide which light was really the best. True to this pledge, the Institute began the duration test on April 11. Four companies, the Edison, the Weston, the Stanley, and the Woodhouse and Rawson, competed. The Sawyer, Mann, and Brush-Swan companies declined to participate. Extraordinary precautions were taken to prevent access to the lamps except by members of the Test Committee. Photometric tests were made at intervals. The results will shortly be published to the scientific world by the Institute. Yesterday morning the test had reached its 1,064th hour, and closed at 11:35 o'clock. The Edison Company, who entered twenty-one lamps, had lost one. They used the natural fibre bamboo carbon. The United States Weston Company, who entered twenty-four, lost seventeen, the artificial tamidene carbon being used. The Stanley Company lost nineteen out of twenty-two, and the English firm of Woodhouse & Rawson lost eleven, or their whole number entered. The result is a great victory for the Edison Company, as there has been much rivalry between the various corporations as to the merits of their lights. The Institute spent $10,000 on the test. A test of dynamos is now in progress and will be completed by the first of June. — *Philadelphia Bulletin.*

CLARK'S FLOATING BREAKWATER. — Mr. E. Hele Clark, of Starcross, Devonshire, shows models of a floating breakwater, the special application of which is in connection with the spreading of oil over the surface of waves, in order to check their violence. Mr. Clark's intention is to provide a means by which the floating breakwater itself is made to contain the oil, and to distribute it automatically, and further that the arrangement can be shifted without difficulty, so as to be moored in any desired position. By such means the removal of the cargo from a shipwrecked vessel may be facilitated, by anchoring the breakwater in such a position as to shield it from the force of the waves. The breakwater consists of a train of casks, or cylinders, connected to each other by ropes. Ballast is placed in each of the cylinders so as to load it to any desired flotation line, and the remaining space is filled with some absorbent material such as cotton waste. Oil is poured in until the waste is more than saturated, and holes are formed in the sides of the vessels above the water. This completes the apparatus, which certainly is of the simplest possible nature, and could be rigged up in extempore fashion at an hour's notice on any part of the coast. When placed in the water, the violent action of the waves forces the oil in sufficient quantities from the supersaturated waste, and it spreads in a calm-imparting film over the surface of the water. —*Engineering.*

A SHIP-RAILWAY IN THE PROVINCES. — The construction of a ship-railway to connect the Bay of Fundy with the Gulf of St. Lawrence has now been finally decided on. This will not exactly make Nova Scotia an island, but ships of one thousand tons and under will be able to reach St. John from Montreal, Quebec, and other ports on the St. Lawrence without having to encircle the dangerous Nova Scotia coast — a saving of six hundred miles. The ship-railway, which is to be seventeen miles long, will be supported by a subsidy of $30,000 a year for twenty years from the Canadian Government. —*Philadelphia Press.*

THE EFFECT OF TREE-PLANTING IN KANSAS. — In his Arbor Day proclamation the Governor of Kansas said that the State which the pioneers found treeless and a desert now bears upon its fertile bosom "more than 20,000,000 fruit trees, and more than 200,000 acres of forest trees, all planted by our own people." The Governor also says, "That there has been an increase in the rain-fall in Kansas is fully proved by the statistics of our oldest meteorologists."

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

317,718. CHIMNEY-TOP AND VENTILATOR.—Gustav Burkhardt, Homer, Ill.

317,730. METHOD OF PRESERVING WOOD. — Edward Z. Collings, Camden, N. J., and Charles F. Pike, Philadelphia, Pa.

317,752. MACHINE FOR TESTING CEMENT.—Henry Faija, Westminster, County of Middlesex, England.

317,760. WOOD-WORKER'S BENCH-VISE. — Geo. W. and Charles A. Geissenhainer, Pittsburgh, Pa.

317,793. LAYING ARTIFICIAL STONE OR CONCRETE ARCHES.—Peter H. Jackson, San Francisco, Cal.

317,797-798. INSIDE BLIND.—Friedrich Keller, Milwaukee, Wis.

317,841. CORNICE-CUTTER.—Dudley Newton, Newport, R. I.

317,862. FIRE-ESCAPE. — Conrad Schrader and Friedrich W. Kitler, Milwaukee, Wis.

317,867. COPING.—Joseph F. Smith, Pittsburgh, Pa.

317,868. MANUFACTURE OF RIDGE-CAPS FOR CORRUGATED ROOFING—John Smith, Kansas City, Mo.

317,885. PENDULUM-LEVEL. — William C. Thayer, Bainbridge, N. Y.

317,899. HOSE-TOWER AND FIRE-ESCAPE. — William M. Ward, Harbor Grace, N. F.

317,923-924. WRENCH. — Amos Call, Springfield, Mass.

317,926. WEATHER-STRIP.—Simon Chaffin, Sedalia, Mo.

317,931. FIRE-ALARM.—Gustave J. Crikelair, New York, N. Y.

317,940. APPARATUS FOR HEATING WATER IN BATH-TUBS.—George Hayes, New York, N. Y.

317,941. MORTISE-LOCK. — Frank A. Hollenbeck, Syracuse, N. Y.

317,943. ILLUMINATING-TILE CONSTRUCTION. — Thaddeus Hyatt, Brooklyn, N. Y.

317,944. ILLUMINATING COMBINATION-TILE. — Thaddeus Hyatt, Brooklyn, N. Y.

317,945. CONCRETE LIGHT FOR BUILDINGS, AREAS, ETC.—Thaddeus Hyatt, Brooklyn, N. Y.

317,959. FLOORING-CLAMP. — Paschal J. Abbott, Dexter, Me.

317,973. CHIMNEY AND VENTILATOR-TOP.—Conrad H. Casselmann, Effingham, Ill.

318,054. MANUFACTURE OF IMITATION-BRICK WEATHER-BOARDING. — Peter Toglio, Charleston, S. C.

318,083. SELF-CLOSING COCK FOR WATER-PIPES.—James M. Brennan, Elkhart, Ind.

318,084. STEAM-HEATING APPARATUS.—Henry W Brinckerhoff, Brooklyn, N. Y.

318,086. FIRE-ESCAPE TOWER. — Christopher Clarke, Northampton, Mass.

318,089. PIPE-WRENCH.—Frederick Crocker, Olean, N. Y.

318,099. PENDULUM-LEVEL. — Addison E. Gardner, Milan, Mich.

318,108. ADJUSTABLE CRESTING. — Christian Hanika, Springfield, O.

318,109. SHUTTER-WORKER. — James Hargraves, Providence, R. I.

318,125. DOOR-HANGER. — David Manuel, Hyde Park, Mass.

318,126. APPARATES FOR SETTING ENCAUSTIC TILES, ETC.—Riverius Marsh, New Brunswick, N. J.

318,164. WINDOW. — William C. Bullivant, Boston, Mass.

318,183. SCHOOL DESK AND SEAT. — Gustavus Hamel, De Soto, Mo.

318,185. FLUID-EJECTOR FOR DRAINING CELLARS. —George Haydn, Baltimore, Md.

318,196. WALL AND CEILING OF BUILDINGS.—Lewis A. Mitchell, Elizabeth, N. J.

318,202. ELEVATOR ALARM-BELL.—Louis W. Pedicord, St. Joseph, Mo.

318,258. DOOR-CLOSER. — Mathew P. Ismay, Newcastle-upon-Tyne, England.

318,265. CONTINUOUS-ACTION KILN FOR BURNING BRICKS, ETC.—Henry Knowles, Woodville, County of Leicester, England.

318,280. SIDING-GUAGE. — Peter V. Moberg, Marinette, Wis.

318,293. FIRE-ESCAPE. — Henry Rensch, Quincy, Ill.

318,299. FIRE-ESCAPE. — Silvestre Sampre, New York, N. Y.

318,301. SAFETY-FLUE FOR CHIMNEYS. — Samuel W. Schnabel, Mayview, Mo.

318,319. DRAWING-BOARD AND DRAUGHTING-APPLIANCE.—Walter G. Stewart, Reading, Pa.

318,323. DOOR-CHECK. — William H. Teetzel, Detroit, Mich.

318,324. WALL FOR THE SUPPORT OF ARCHES AND BRICKS FOR THE CONSTRUCTION OF THE SAME.—Elah Terrell and William H. Fish, Columbus, O.

318,331. ADJUSTABLE-FACED PLANE. — Edwin Walker, Erie, Pa.

318,347. BRICK AND TILE MACHINE. — Albert L. Brewer and Hendrick Heesen, Tecumseh, Mich.

318,352. CAP AND ANCHOR FOR METALLIC ROOFING.—Benjamin F. Caldwell, Wheeling, W. Va.

318,373. ELEVATING MECHANISM FOR BUILDINGS. —William B. Hayden, Columbus, O.

318,388. LOCK.—Calvin W. Parsons, Scranton, Pa.

318,391. FIRE-ESCAPE. — William R. Price, Still Pond, Md.

318,401. STEAM-HEATING APPARATUS.—Frederick Tudor, Boston, Mass.

318,414. SHUTTER-FASTENER.—John A. Burr, New York, N. Y.

318,418. SPRING-HINGE. — Benoni Colvin and John Wolfley, Freeport, Ill.

318,421. SHUTTER-WORKER. — Russell G. Dudley, Jersey City, N. J.

318,437. WEATHER-STRIP. — John Trachsel, Jacob K. Lipps and William H. Turney, Columbia City, Ind.

SUMMARY OF THE WEEK.

Baltimore.

BUILDING PERMITS.—Since our last report thirty-two permits have been granted, the more important of which are the following: —

Dr. Wm. A. Moale, 4 two-st'y brick buildings, w s Division St., s of Dolphin St., and 4 two-st'y brick buildings, e s Brewer Alley, in rear.

J. W. Parks, 4 three-st'y brick buildings, commencing s w cor. Fort Ave. and Marshal St.

D. R. Miller, 2 three-st'y brick buildings, w s Tyson St., between Centre and Franklin Sts.

John Weitzel, 8 two-st'y brick buildings, w s Madeira Alley, s of Monument St.

Wm. McLaughlin, 8 two-st'y brick buildings, e s Little William St., n of Barney St., and 6 two-st'y brick buildings, n s Winder St., commencing n w cor. Johnson St.

Benj. B. Buck, 10 three-st'y brick buildings, n s Baltimore St., commencing n w cor. Gilman St.

R. & H. Laupheimer, three-st'y brick building, s s Gay St., between Aisquith and Forrest Sts.

J. S. Dyer, 5 two-st'y brick buildings, e s Scott St., s of Ramsay St.

J. & C. M. Stewart, 3 three-st'y brick buildings, s w s Myrtle Ave., n w intersection of Harlem Ave.

Wehr. Hobelman & Gottleib, three-st'y brick building, n s Conway St., e of Hanover St.

F. M. Woolf, three-st'y brick building, s s Baltimore St., between Carey and Calhoun Sts.

Boston.

BUILDING PERMITS. — *Wood. — Walk Hill St.*, near Blue Hill Ave., dwell., 20′ x 22′; owner, H. L. Atkinson; builder, J. J. Desmond.

Rockwell St., near Milton Ave., dwell., 24′ and 28′ x 30′; owner and builder, Thomas Pelton.

Vernon St., No. 142, cor. Linden Pl., dwell., 28′ 6″ and 29′ 6″ x 25′ 6″ and 33′ 3″; owners, N. C. & A. W. Morison; builder, N. C. Morrison.

H St., cor. East First St., manufactory, 40′ x 100′; owner, Suffolk M'f'g Co.

East Sixth St., No. 560, dwell., 22′ x 31′; owner, Julian A. Evans.

Quincy St., near Blue Hill Ave., stable, 24′ x 31′; owner, Frank M. Silva; builder, Manuel Silva.

Saratoga St., cor. Butler Ave., stable, 35′ x 58′; owner, Mrs. Harriet Burnett; builder, Wm. Messenger.

Cambridge St., near Saunders St., stable, 20′ x 30′; owner, J. F. Wadleigh.

Saratoga St., No. 793, stable, 20′ x 27′; owner, Mrs. M. Roby.

Brook Ave. Pl., near Brook Ave., dwell., 13′ and 22′ x 30′; owner and builder, J. Tucker.

Lexington St., No. 95, dwell., 21′ x 31′; owner, O. Lindergreen; builder, Garrett Dempsey.

East Fifth St., near H St., dwell., 20′ x 27′; owner and builder, E. M. White.

Brooklyn.

BUILDING PERMITS. — *Henry St., Nos.* 632-636, 139′ n Coles St., two-st'y church and Sunday-school, slate roof; cost, $16,000; Our Saviour's Norwegian Evangelical Church, New York, 56 Monroe St.; architect and builder, C. H. Griese.

Grand St., n e cor. Olive St., four st'y brick store and tenement, tin roof, iron cornice; cost, $10,000; owner and builder, Bernard Gallagher, 122 Union Ave.; architect, E. F. Gaylor.

Broadway, Nos. 619 *and* 621, e s, 34′ 4′ s Debevoise St., four-st'y brick store and dwell., tin roof; cost, $10,000; owner, Henry Meis, on premises; architect, Th. Engelhardt; builders, H. Eich & Bros.

Bedford Ave., s w cor. Lexington Ave., 3 four-st'y brick stores and flats, tin roofs, wooden cornices; cost, $7,000; owner, J. H. Ireland, Quincy St.; architect, I. D. Reynolds; builders, C. King and M. C. Ruch.

North Second St., n s, 150′ e Graham Ave., two-st'y brick dwell., tin roof; cost, $4,500; owner, Chas. Roemmelle, North Second St. and Graham Ave.; architect, J. Platte; builders, A. Frey and J. Rauth.

Park Ave., Nos. 747, n s, 200′ *w* Tompkins Ave., three-st'y brick tenement, tin roof, iron cornice; cost, $5,500; owner and contractor, Valentine Bruchhauser, 739 Park Ave.; architect, A. Herbert.

Raymond St., e s, 130′ s Willoughby St., rear, one-st'y brick cook and wash house, tin roof; cost, $5,000; owner, King's County; architect and builder, D. Ryan.

Sumner Ave., w s, 23′ n Quincy St., 6 two-st'y brown-stone dwells., tin roofs; cost, each, about $4,000; owner, architect and builder, D. S. Beasley, 39 Pulaski St.

Sumner Ave., n w cor. Quincy St., three-st'y brick store and dwell., tin roof; cost, $6,000; owner, architect and builder, same as last.

Stockton St., s w cor. Marcy Ave., 2 three-st'y frame stores and tenements, (brick-filled), tin roofs; cost, $4,000; owner, Wilhelmina Wills, 254 Humboldt St.; architect, H. Vollweiler; builder, Nicolaus.

Putnam Ave., n s, 39′ w Broadway, 2 three-st'y frame tenements, tin roofs; cost, $4,500; owner, D. W. La Fetra, 415 Putnam Ave.; builder, J. Brown; architect, R. Dixon.

Broadway, n w cor. Putnam Ave., three-st'y frame dwell., tin roof; cost, $5,000; owner, etc., same as last.

Broadway, w s, 53′ n Putnam Ave., three-st'y frame store and flat, tin roof; cost, $5,000; owner, architect and builder, same as last.

Putnam Ave., s s, 155′ e Tompkins Ave., 3 three-st'y brown-stone dwells., tin roofs; cost, each, $7,000; owner and builder, Chas. Isbill, 593 Herkimer St.

Halsey St., n s, 300′ w Reid Ave., 3 three-st'y brown-stone dwells., tin roofs; cost, each, $5,000; owner and builder, P. Ward, 723 Gates Ave.; architect, R. Dixon.

Greene Ave., s s, 428′ w Nostrand Ave., three-st'y brick and stone dwell.; cost, $10,000; owner, Rachel Armstrong, on premises; builder, G. F. Chapman.

Schermerhorn St., n s, 50′ e Court St., four-st'y brick tenement, tin roof; cost, $9,000; owner, James B. Healey, 205 Montague St.; architects and builders, O. K. Buckley & Son.

Washington Ave., Nos. 323 *and* 325, 2 three-and-a-half-st'y brown-stone dwells., tin roofs; cost, each, $8,000; owner, S. H. Cornell, 327 Washington Ave.; architect, A. Hill.

Gates Ave., s s, about 85′ w Franklin Ave., 6 three-st'y attic brick dwells., slate and tin roofs; cost, $55,000; owner, John Gibb, Broadway and Grand St., New York; architects, Parfitt Bros.; builders, Flynt Building and Construction Co.

North Ninth St., Nos. 142 *to* 146, s s, 125′ e Third St., 3 four-st'y frame dwells., tin roofs; cost, each, $5,500; owner, A. W. Schmidt, cor. North Ninth and Fourth Sts.; architect, Th. Engelhardt; builders, Joseph Wagner, Jr., and Jacob Armendinger.

Boerum St., Nos. 92 *and* 94, s s, 150′ w Ewen St., 2 three-st'y frame stores and tenements, tin roofs; cost, each, $4,200; owners, Josephine Cooper and Sophie Faust, on premises; architect, Th. Engelhardt; builders, J. J. Hoepfer & Son and John Fuchs.

Fulton St., s w cor. Rockaway Ave., 5 three-st'y brown-stone stores and dwells., felt, tin and gravel roofs; cost, each, $5,000; owner, Geo. R. Brown, 34 South Portland Ave.; builder, L. E. Brown.

Fulton St., Nos. 418 *and* 420, six-st'y Euclid Ohio stone and terra-cotta store and show-rooms, metal and slate roof; cost, $30,000; owner, W. C. Vosburgh M'f'g Co., Schermerhorn St.; architects, Parfitt Bros.; builders, James Ashfield & Son and P. F. O'Brien.

Fulton St., Nos. 414 *and* 416, six-st'y stone front store and show-rooms, metal and slate roof; cost, $25,000; owner, J. M. Horton Ice Cream Co.; architect and builder, same at last.

Hamilton Ave., south junction of Columbia St., two-st'y brick store and tenement, tin roof; cost, about $9,800; owner, Joseph J. Day, Jr., 19 Manhasset Pl.; architect, Samuel Curtin.

Montrose Ave., s s, 150′ e Humboldt St., three-st'y frame store and tenement, tin roof; cost, $4,200; owner, Jacob Jesberger, Montrose Ave.; architect, John Platte; builder, John Auer.

Lawton St., s s, 100′ w Bushwick Ave., Boulevard, three-st'y frame tenement, tin roof; cost, $3,500; owner, Henry Wills, Jefferson St.; architect, John Platte; builder, Henry Loeffler.

Fourth-street Basin, Gowanus Canal, s s, 280′ w Third Ave., one-st'y frame factory, gravel roof; cost, $4,800; owner, G. A. Reichardt, 15 Platt St., New York; architect and builder, D. E. Norris.

Seigel St., s s, 120′ w Humboldt St., three-st'y frame tenement, tin roof; cost, $4,400; owner and architect, F. R. Waellein, on premises; builder, J. Rueger.

Van Brunt St., e s, 80′ n Irving St., 3 four-st'y brick buildings, gravel roofs; cost, for all, $20,000; Marx & Rawolle, 163 William St., New York; architect, Thomas Gaunt; builders, P. J. Carlin and Long & Barnes.

Van Brunt St., e s, 40′ s Harrison St., two-st'y brick stable and dwell., felt and gravel roof, brick cornice; cost, $6,000; owner, architect and builder, same as last.

Van Brunt St., n e cor. Irving St., six-st'y brick building (for manufacturing purposes), cement and asphalt roof; cost, $79,000; owner, architect and builders, same as last.

Union St., s s, 290′ w Fifth Ave., 14 two-st'y brick dwells. tin roofs; cost, each, $5,000; owner and builder, C. Donnellon, 754 Union St.; architect, Robert Dixon.

Central Ave., n w cor. Suydam St., three-st'y frame store and tenement, tin roof; cost, $5,000; John Young, 785 Broadway; architect, Geo. Hillenbrand; builder, John Rueger.

Hamburg St., e s, 25′ s Melrose St., three-st'y frame store and tenement, tin roof; cost, $4,000; owner and mason, William Bayer, 69 Starr St.; architect, George Hillenbrand.

Hamburg St., s e cor. Melrose St., three-st'y frame store and tenement, tin roof; cost, $4,900; owner, mason and architect, same as last.

Macon St., s s, 40′ e Sumner Ave., 3 three-st'y brown-stone dwells., tin roofs; cost, each, $6,000; owner, etc., Wm. Zang, 98 Willoughby St.

Atlantic Ave., No. 501, n s, 150′ w Third Ave., five-st'y stores and tenements, tin roofs; cost, $15,000; Charles Werner and George Schnorr, 82 Schermerhorn St.; architect, Charles Werner; mason, J. F. Kelly; contractors, Martin & Lee.

York St., s s, 100′ e Adams St., five-st'y brick tin factory, tin roof; cost, $12,000; S. A. Ilsley & Co., on premises; architects, Eastman & Davis; builders; T. B. Rutan and E. Snediker.

Jefferson St., s s, 629′ e Throop Ave., 4 three-st'y brown-stone dwells., felt and gravel roofs; cost, each, $6,000; owner and architect, Wm. V. Studdiford, 82 Woodhull St.

Quincy St., n s, 467′ 8″ e Reid Ave., three-st'y brown-stone dwell., tin roof; cost, $4,800; A. S. Walsh, Madison St.; architect and builder, A. Miller.

Wythe Ave., e s, 30′ s Penn St., 2 three-st'y brick tenements, tin roofs; cost, each, $5,000; owner and builder, Peter Commerford, 67 Rodney St.; architect, I. D. Reynolds.

Wythe Ave., s e cor. Penn St., three-st'y brick store and tenement, tin roof; cost, $5,000; owner and builder, Peter Commerford, 67 Rodney St.; architect, I. D. Reynolds.

First St., n e cor. Seventh Ave., 6 three-st'y and basement brown-stone dwells., tin roofs; cost, each, $8,000; owners, etc., Martin & Lee, 440 Clermont Ave.

De Kalb Ave., n s, 150′ w Lewis Ave, 2 four-st'y brick stores and tenements, tin roofs; cost, each,

BUILDING INTELLIGENCE.

$10,000; owner and mason, M. J. McLaughlin, 100 Kosciusko St.; architects, Hall & Newkirk.

Ellery St., n s, 150′ e Sumner Ave., two-st'y brick stores, tin roofs; cost, $4,500; August Grill, Jefferson St., near Bushwick Ave.; architect, John Platte; builder, John Rueger.

Bainbridge St., n s, 75′ w Reid Ave., 3 two-st'y brick dwells., tin roofs; cost, each, $4,000; Mrs. Kate Acor, 187 Bainbridge St.; architect, Amzi Hill.

Bushwick Ave., w s, 28′ s Troutman St., three-st'y frame store and tenement, tin roof; cost, $5,244; Johann Lange, 11 Stagg St.; architect, F. Holmberg; builders, John Rueger and Ernst Loerch.

Bushwick Ave., s w cor. Troutman St., three-st'y frame tenement, tin roof; cost, $5,400; owner, architect and builder, same as last.

Adams St., Nos. 77 and 79, 2 three-st'y frame tenements, tin roofs; cost for both, $10,101; George Koch, 79 Adams St.; architect, Frank Holmberg; builders, John Rueger and H. Bruchhauser.

Marcy Ave., w s, 50′ s Stockton St., 2 three-st'y frame tenements, tin roofs; cost, each, $4,000; Wilhelmina Will, 254 Humboldt St.; architect, H. Vollweiler; builder, Nicholaus Will.

Ellery St., n s, 375′ w Marcy Ave., three-st'y frame tenement, tin roof; cost, $3,400; owners and builders, Casp. Volhard and Chas. Reider, 22 Union Ave.; architect, H. Vollweiler.

Norman Ave., n w. cor. Jewel St., 4 three-st'y frame store and tenement and tenements, cement and gravel roofs; cost, each, $3,500; owner, architect and contractor, David Atkin, 551 Lorimer St.; masons, Gatley & Smith.

Grand St., No. 166, s s, running through and including 169-177 South First St., two-st'y brick theatre, tin roof; cost, $17,000; Knapp, McCoard & Palmer, 94 Broad St., New York; architect, G. W. Wundrum; builders, Leahy & Moran.

South First St., Nos. 169-177, running through and including 166 Grand St., two-st'y brick theatre, tin roof; cost, $17,000; owners, architect and builders, same as last.

Ninth St., s w cor. Eighth Ave., 6 three-st'y and basement dwells., tin roofs; cost, one $8,000, and others, $6,000 each; Charles Long, 450 Ninth St.; builder, J. F. Wood.

Bedford Ave., No. 379, e s, abt. 250′ n Myrtle Ave., four-st'y brick tenement, tin roof; cost, $11,000; George Pfeiffer; builders, Jacob Rauth and —— McRush.

ALTERATIONS.—*Clinton Ave., No. 353*, three-st'y brick extension, tin roof; also interior alterations; also rear wall rebuilt; cost, $12,000; W. H. Nichols, on premises; architect, J. W. Romeyn; builder, P. J. Carlin; contractor, not selected.

Willoughby St., s e cor. Raymond St., interior alterations, etc.; cost, $27,000; owner, Kings County; architect, Daniel Ryan.

Chicago.

BUILDING PERMITS.—J. O'Malley, 7 three-st'y dwells., 199 to 209 Twenty-first St.; cost, $18,000; architect, J. J. Flanders.

Wm. M. Dale, 5 three-st'y dwells., 490 to 492 Madison St.; cost, $18,000; architect, Furst & Rudolph.

C. R. Dix, three-st'y dwell., 2226 Indiana Ave.; cost, $3,000; architects, Cobb & Frost.

Chicago Gas-Light and Coke Co., addition, Cologne and Deering Sts.; cost, $20,000.

(*Continued on page 3, Supplement.*)

PROPOSALS.

ARTESIAN WELL. [At Omaha, Neb.]

Sealed proposals for an artesian well of 1,000 feet, more or less, will be received at the Institute of the Deaf and Dumb at Omaha, Neb., **till July 10.**

For particulars address the superintendent. 494

FURNITURE. [At Cincinnati, O.]

OFFICE OF THE SECRETARY,
TREASURY DEPARTMENT,
WASHINGTON, D. C., May 29, 1885.

Sealed proposals will be received at this Department **until 2 o'clock, P. M., Monday, June 15, 1885,** for manufacturing and placing in position, in complete working order, furniture for the United States custom-house building at Cincinnati, O.

Drawings and specifications, with blank forms of proposals, can be obtained upon application to this office, where any further information may be had.

The Department reserves the right to reject any or all bids, and to waive defects.

Partial bids will not be considered.

Proposals should be addressed to the Secretary of the Treasury, and endorsed, "Proposals for Furniture for Custom-House, Cincinnati, O."

D. MANNING,
494 Secretary.

STONE AND BRICK WORK, FENCING AND GRADING FOR THE APPROACHES TO THE MARINE HOSPITAL BUILDINGS. [At Cairo, Ill.]

OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., May 28, 1885.

Sealed proposals will be received at this office **until 2 P. M., on the 20th day of June, 1885,** for building the stone and brick work, fencing and grading required for the approaches to the Marine Hospital Building at Cairo, Ill., in accordance with drawing and specification, copies of which and any additional information may be had on application at this office or the office of the superintendent.

Bids must be accompanied by a certified check for $200 for stone and brick work, $200 for fencing, and $300 for the grading, drawn to the order of the "Secretary of the Treasury," as a guaranty that the bidder will enter into a contract, if his bid is accepted, and furnish a bond equal to the amount of the contract.

Bids received after the time of opening will not be considered. M. E. BELL,
493 Supervising Architect.

ELECTRIC-LIGHTING. [At Traverse City, Mich.]

TRAVERSE CITY, MICH., April 29, 1885.

Sealed proposals will be received at Traverse City, Mich., by the Board of Commissioners of the Northern Asylum for the Insane, **until 10 A. M., of Wednesday, June 24, 1885,** at which time said proposals will be opened, for lighting the Northern Asylum for the Insane at Traverse City, Mich., by incandescent electric light, including dynamos, wiring, fixtures, engines, etc., all complete, excepting only the boilers, which will be furnished by the Asylum.

For information relative to conditions, plans, etc., see or address, C. M. WELLS.

By order of Board of Commissioners. 494

WAREHOUSE. [At Holyoke, Mass.]

HOLYOKE, MASS., May 25, 1885.

The trustees of the Whiting Street Estate invite sealed proposals for the building of a "Four-story warehouse and Office building" on Main Street in the city of Holyoke, Mass., according to plans and specifications prepared for the same by E. A. Ellsworth, Architect. Work to be divided and tenders to be submitted as follows:—

For brickwork and plastering.
For cut stone-work and setting the same.
For cast and wrought-iron work (columns and girders).
For carpenter work.
For slate and gravel roofing.
For painting and finishing.

Plans and specifications may be seen and all other information at the office of the architect.

Proposals will be received by the architect or trustees **until Wednesday, June 3, 1885, at 6 o'clock P. M.**

The trustees reserve the right to reject any or all bids, as may appear for the interest of the estate.

J. C. PARSONS,
493 For the Trustees.

BOILER-HOUSE. [Near Dayton, O.]

May 14, 1885.

Sealed proposals will be received at the Central Branch National Home for D. V. S., near Dayton, O., **until 2 o'clock, P. M., of the 16th day of June, 1885,** for supplying all materials and erecting at the Home a fire-proof steam-boiler house; size to be 90′ x 170′, with smoke-stack 150′ high.

Plans and specifications may be seen, on and after June 1, at the office of Peters & Burns, Architects, Dayton, O.

Bids must be made in round sums, and to include all branches of labor and materials, except the excavation for foundation, which will be done by the Home.

Only such bids as are herein called for will be considered, and all bids must be accompanied by certified checks, drawn to the order of the Treasurer, upon some National Bank, for five per cent of the amount of the proposal.

The Home reserves the right to reject any or all proposals, or to divide the contract between two or more bidders.

A sufficient bond will be required from the successful bidders, and in addition ten per cent of contract price will be retained from each payment until the contract shall have been completed.

Any additional information may be had on application at the office of the undersigned.

Envelopes containing proposals should be indorsed "Proposals for Building," and addressed to the undersigned. J. B. THOMAS, Treasurer.

P. O. Address, National Military Home, Ohio. 493

GRATES, MANTEL TILES, ETC. [At Memphis, Tenn.]

OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., June 1, 1885.

Sealed proposals will be received at this office **until 2 P. M., on the 22d day of June, 1885,** for supplying and setting in place, complete, all the grates, mantel tiles, etc., required for the Custom-house and Post-office building at Memphis, Tenn., in accordance with the drawings, specification and schedule, copies of which and any additional information may be had on application at this office or the office of the Superintendent.

Bids must be accompanied by a certified check for $100, drawn to the order of "The Secretary of the Treasury," as a guarantee that the bidder will enter into a contract, if his bid is accepted, and furnish a bond equal to the amount of the contract.

Bids received after the time of opening will not be considered. M. E. BELL,
493 Supervising Architect.

IRON ROOF. [At Quincy, Ill.]

OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., June 2d, 1885.

Sealed proposals will be received at this office **until 2 P. M., on the 25th day of June, 1885,** for furnishing and putting in place, complete, the iron roof, framing, etc., for the post-office, court-house, etc., building, at Quincy, Ill., in accordance with drawings and specification, copies of which and any additional information may be had on application at this office or the office of the superintendent.

Bids must be accompanied by a certified check, (for $500) drawn to the order of "The Secretary of the Treasury," as a guarantee that the bidder will enter into a contract, if his bid is accepted, and furnish a bond equal to the amount of the contract.

Bids received after the time of opening will not be considered. M. E. BELL,
494 Supervising Architect.

PROPOSALS.

COUNTY BUILDINGS. [At Ellsworth, Me.]

May 20, 1885.

Notice is hereby given that bids will be received by the County Commissioners **till Monday, June 8, 1885, at 2 o'clock P. M.,** for the construction of a County Building, to include Court-room and County Offices, which construction shall include the grading of the lot and the furnishing of all materials for the substructure and the superstructure.

Bids will also be received up to the same day and hour for the re-building of the County Jail, and the County Commissioners reserve the right to reject any or all bids.

Plans and specifications can be seen at the office of H. B. Saunders, Clerk of Courts for the County of Hancock, where they may be examined by all who desire to present bids for the work.

The successful bidder will be required to furnish a good and sufficient bond for the faithful performance of the work.

Bids should be sent to H. B. Saunders, County Clerk, Ellsworth, Maine.

J. W. SOMES,
N. B. COOLIDGE,
J. W. BLAISDELL,
} County Commissioners of Hancock County.

493

SOLDIERS' HEADSTONES. [At Hartford, Conn.]

STATE OF CONNECTICUT,
QUARTERMASTER GENERAL'S OFFICE,
HARTFORD, CONN., May 22, 1885.

Proposals will be received at this office **until 12 o'clock, noon, June 8, 1885,** for furnishing and erecting headstones for soldiers' graves.

The headstones are to be of the best quality of American white marble, each stone to be not less than five feet six inches long, one foot four inches wide, and four inches thick, and to stand two feet six inches above the ground. That portion of the stone which will be above ground when set (two feet six inches) to be sand-rubbed. The top of the stone to be curved (convex).

Each stone to be inscribed with the name of the soldier; his rank, if other than a private; the company and regiment to which he belonged, and date of his death, all on one face.

The letters and figures of the inscription to be accurately spaced and designed, properly and tastefully arranged, and smoothly and carefully cut. The work on the stones to be neat and strictly workmanlike in all respects.

The stones to be erected in any cemetery in the State, as they may be ordered from time to time from this office.

Each bid must include the proper setting of the stone at the grave.

A satisfactory bond will be required of the successful bidder.

A sample headstone can be seen and any further information required can be obtained at this office.

All bids should be addressed to

BRIG.-GEN. A. L. GOODRICH,
493 Quartermaster-Gen., Hartford, Conn.

WROUGHT-IRON PIPES. [Near Dayton, O.]

May 15, 1885.

Sealed proposals will be received at the Central Branch National Home for D. V. S., near Dayton, O., **until 2 o'clock, P. M., of the 10th day of June, 1885,** for supplying and delivering at the Home the following materials, as ordered, before December 1, 1885, viz.:—

Twenty-six thousand feet, more or less, lap-welded wrought-iron pipe; sizes, ⅛ to 6 inches.

Brass-mounted I. B., double-gate valves, screw-ends and wheels (for water): six 6-inch, six 4-inch, twelve 2½-inch, and twenty-four 2-inch.

Brass-mounted iron globe valves, without yoke, brass stems and screw-ends (for steam): six 4-inch, twelve 3-inch, twelve 2½-inch, and twenty-four 2-inch.

Iron cocks (square heads): three 4-inch, six 3-inch, six 2½-inch, and twelve 2-inch.

Light brass gas-cocks: twelve 1¼-inch, twelve 1¼-inch, twenty-four 1-inch, and twenty-four ¾-inch.

Cast-iron elbows: one 8-inch, twelve 5-inch, sixty 4-inch, sixty 3-inch, forty 2½-inch, eighty 2-inch, fifty 1½-inch, fifty 1¼-inch, fifty 1-inch, and fifty ¾-inch.

Cast-iron elbows, 45°: fifty 1-inch, and fifty ¾-inch.

Cast iron elbows, easy bends (for water): twenty-four 6-inch.

Cast-iron plugs: six 6-inch, six 5-inch, six 4-inch, twenty 3-inch, twenty 2½-inch, thirty 2-inch, fifty 1½-inch, fifty 1¼-inch, fifty one-inch, fifty ¾-inch, fifty ½-inch, and fifty ⅜-inch.

Cast-iron tees: six 6″ x 4″, twenty-four 6″ x 3″, twenty-four 6″ x 2″, six 5″ x 3″, twelve 4″ x 3″, twenty-four 4″ x 2″, twelve 4″ x 1½″, twelve 3″ x 2″, twelve 3″ x 1¼″, twelve 2½″ x 1″, twelve 2″ x 1½″, twenty-four 2″ x 1″, fifty 1½″ x 1″, and fifty 1¼″ x 1″.

Cast-iron tees, easy bend (for water): six 6-inch and one 6-inch 8-inch outlet.

Cast-iron lateral branch Y's: twelve 2½″ x 1″, and twenty-four 2″ x 1″.

Cast-iron flange unions: six 6-inch, six 5-inch, twelve 4-inch, twenty-four 3-inch, twenty-four 2½-inch, and forty-eight 2-inch.

Malleable iron unions: fifty 2-inch, fifty 1½-inch, fifty 1¼-inch, and fifty 1-inch.

The Home reserves the right to reject any or all proposals, or to divide the contract between two or more bidders.

A sufficient bond will be required from the successful bidders, and in addition ten per cent of contract price will be retained from each payment until the contract shall have been completed.

Envelopes containing proposals should be indorsed "Proposals for Iron Pipe, etc.," and addressed to the undersigned. J. B. THOMAS,
Treasurer.

P. O. Address, National Military Home, Ohio. 493